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PAPERS AND PROCEEDINGS

OF THE

Seventieth Annual Meeting

OF THE

AMERICAN ECONOMIC ASSOCIATION

Philadelphia, Pennsylvania, December 28-30, 1957

Edited by James Washington Bell, Secretary of the Association
and
Gertrude Tait, Executive Assistant

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PROCEEDINGS

PROGRAM OF THE SEVENTIETH ANNUAL MEETING OF THE AMERICAN ECONOMIC ASSOCIATION

Philadelphia, Pennsylvania, December 28-30, 1957

Beyond giving a substantial emphasis to current policy questions, no attempt was made to organize the program around a central theme. In planning the program a conscious effort was made, as in previous years, to include persons who had not appeared on recent programs and to distribute participation widely among regions, age groups, and the various academic institutions and research agencies. A special session was organized, consisting of papers submitted in open competition.

The participation of two Soviet economists, T. S. Khachaturov and V. J. Aboltin, was frustrated by bad flying conditions. However, the manuscripts have since been received and are included in this volume.

Friday, December 27, 1957

6:30 P.M.

Dinner Meeting of the Executive Committee

Saturday, December 28, 1957

9:00 A.M.

Agenda for a National Monetary Commission **(Joint session with the American Finance Association)**

Chairman: LESTER V. CHANDLER, Princeton University

Papers: HERBERT STEIN, Committee for Economic Development; JAMES W. ANGELL, Columbia University; EDWARD M. BERNSTEIN, International Monetary Fund

Discussants: A. N. MCLEOD, Toronto-Dominion Bank; JOHN G. GURLEY, Brookings Institution

Current Economic Questions Relating to Western Europe

Chairman: CORWIN D. EDWARDS, University of Chicago

Papers: RAYMOND F. MIKESELL, University of Oregon; ROGER C. DIXON, U. S. Department of State; FRANK A. SOUTHARD, JR., International Monetary Fund

Discussants: RICHARD GARDNER, Columbia University; THEO SURÁNYI-UNGER, Syracuse University; RAYMOND VERNON, New York Metropolitan Region Study

Petroleum and Natural Gas and the Public Interest

Chairman: BEN W. LEWIS, Oberlin College

Papers: JOEL B. DIRLAM, Boni, Watkins, Jason and Company; JAMES R. NELSON, Amherst College

Discussants: LESLIE COOKENBOO, JR., Rice Institute; JOHN W. BOATWRIGHT, Standard Oil Company of Indiana; BRUCE NETSCHERT, Resources for the Future

2:30 P.M.

State and Local Public Finance

Chairman: LAWRENCE SELTZER, Wayne University

Papers: HARVEY BRAZER, University of Michigan; DICK NETZER, Federal Reserve Bank of Chicago

Discussants: LYLE C. FITCH, Institute of Public Administration; WALTER HELLER, University of Minnesota

Veblen Centenary Round Table

Chairman: JOSEPH J. SPENGLER, Duke University

Papers: JOSEPH DORFMAN, Columbia University; ALLAN G. GRUCHY, University of Maryland; ISADOR LUBIN,[1] Industrial Commissioner, New York State; PAUL M. SWEEZY, Cambridge, Massachusetts

Discussants: PETER N. VUKASIN, Harpur College; GEORGE ZINKE, University of Colorado

Selected Papers—American Economic Association Competition

Chairman: RUTH P. MACK, National Bureau of Economic Research

Papers: LAWRENCE FOURAKER, Pennsylvania State University; DANIEL R. FUSFELD, Michigan State University; DEAN A. WORCESTER, JR., University of Washington

Discussants: EDWARD H. CHAMBERLIN, Harvard University; ALFRED E. KAHN, Cornell University

[1] No manuscript received.

8:00 P.M.

Criteria for Capital Investment Decisions in the USSR[2]

Chairman: MORRIS A. COPELAND, Cornell University

Speakers: T. S. KHACHATUROV, Corresponding Member, Academy of Sciences of the USSR; V. ABOLTIN, University of Moscow

Sunday, December 29, 1957

9:00 A.M.

Income and Consumption

Chairman: FRANK A. HANNA, Duke University

Papers: DOROTHY BRADY, University of Chicago; RALPH B. BRISTOL, JR., RAND Corporation; HELEN LAMALE, Bureau of Labor Statistics

Discussants: FRANK NOTESTEIN, Princeton University; MEREDITH B. GIVENS, New York State Interdepartmental Committee on Low Incomes

I. Economic Projections

II. A Statistical Contribution to Price Theory

Chairman: SOLOMON FABRICANT, National Bureau of Economic Research

Papers: GERHARD COLM, National Planning Association; HOLBROOK WORKING, Food Research Institute, Stanford University

Discussants: ROBERT M. WEIDENHAMMER, University of Pittsburgh; DONALD F. GORDON, University of Washington; ALFRED SHERRARD, Alexandria, Virginia; JOHN W. KENDRICK, George Washington University

Forecasting (Joint session with the Econometric Society)[3]

Chairman: EARL F. BEACH, McGill University

Papers: ARTHUR OKUN, Cowles Foundation; DON J. DALY, Department of Trade and Commerce, Canada; RICHARD J. FOOTE, Connell Rice and Commission Company and FREDERICK V. WAUGH, U.S. Department of Agriculture

Discussants: ARNOLD ZELLNER, University of Washington; ZVI GRILICHES, University of Chicago; CARL F. CHRIST, University of Chicago

Trends in Capital Investment and Capacity

Chairman: MARTIN B. GAINSBRUGH, National Industrial Conference Board

Papers: WILLIAM BUTLER, Chase Manhattan Bank; DANIEL CREAMER, National Industrial Conference Board

Discussants: ERIC SCHIFF, Machinery and Allied Products Institute; ROBERT C. WASSON, U.S. Department of Commerce; RAYMOND GOLDSMITH, National Bureau of Economic Research

Agricultural Adjustment Reconsidered (Joint session with the American Farm Economic Association)[3]

Chairman: EARL O. HEADY, Iowa State College

Papers: O. B. JESNESS, University of Minnesota; MARION CLAWSON, Resources for the Future

Discussants: WILLIAM JONES, Stanford University; KENNETH ROBINSON, Cornell University; HUGH L. STEWART, U.S. Department of Agriculture

2:30 P.M.

Measuring Production in the USSR

Chairman: CALVIN B. HOOVER, Duke University

Papers: GEORGE KUZNETS,[4] University of California; G. WARREN NUTTER, University of Virginia; ERNEST WILLIAMS, Columbia University

Discussants: D. GALE JOHNSON,[4] University of Chicago; HANS HEYMANN, JR., RAND Corporation; HOLLAND HUNTER, Haverford College

Monetary Analysis and the Flow of Funds

Chairman: HENRY C. MURPHY, International Monetary Fund

Papers: JOHN C. DAWSON, Grinnell College; STEPHEN TAYLOR, Federal Reserve Board

Discussants: ALAN GREENSPAN, Townsend and Greenspan Company; PAUL B. SIMPSON, University of Oregon; ADDISON T. CUTLER, Federal Reserve Bank of Cleveland

Further Explorations in Monopolistic-Competitive Price Theory

Chairman: CARTER GOODRICH, Columbia University

Papers: JOHN MAURICE CLARK, Columbia University; WALTON HAMILTON, Arnold Fortas & Porter

[2] Session canceled, but see foreword to this program.
[3] Not to be published by the American Economic Association.
[4] In the absence of Professor Kuznets, Professor Johnson discussed the subject matter informally; hence no manuscript is available for publication.

Discussants: CLARENCE E. AYRES, University of Texas; RICHARD B. HEFLEBOWER, Northwestern University; CARL KAYSEN, Harvard University

8:00 P.M.

Presidential Address
Chairman: SUMNER H. SLICHTER, Harvard University
Award of the Francis A. Walker and the John Bates Clark Medals[5]
Address: MORRIS A. COPELAND,[6] Cornell University

Monday, December 30, 1957

9:00 A.M.

Democracy and Trade Unionism
Chairman: NEIL W. CHAMBERLAIN, Ford Foundation
Papers: JOEL SEIDMAN, University of Chicago; CLYDE W. SUMMERS, Yale University; BENJAMIN D. SEGAL, International Union of Electrical Workers, AFL-CIO
Discussant: ARTHUR J. GOLDBERG,[1] AFL-CIO

Agricultural Parity (Joint session with the American Farm Economic Association)
Chairman: JOHN D. BLACK, Harvard University
Papers: O. V. WELLS, U.S. Department of Agriculture; RUTLEDGE VINING, University of Virginia
Discussants: VINCENT W. BLADEN, University of Toronto; ELMER J. WORKING, Washington State College

A Critical Evaluation of Public Regulation by Independent Commissions
Chairman: HORACE M. GRAY, University of Illinois
Papers: WALTER ADAMS, Michigan State University; LUCILE SHEPPARD KEYES, Washington, D.C.; LELAND OLDS, Energy Research Associates
Discussants: CHARLES S. MORGAN, Washington, D.C.; FREDERIC P. MORRISEY, University of California; THEODORE J. KREPS,[1] Stanford University

12:30 P.M.

Joint Luncheon with the American Finance Association
Chairman: MARSHALL D. KETCHUM, University of Chicago
Address: PER JACOBSSON, International Monetary Fund

2:30 P.M.

Is Another Major Business Contraction Likely?
Chairman: ARTHUR F. BURNS, National Bureau of Economic Research
Papers: ASHER ACHINSTEIN, Library of Congress; BERT G. HICKMAN, Brookings Institution
Discussants: V. LEWIS BASSIE, University of Illinois; EMERSON SCHMIDT, U.S. Chamber of Commerce; DANIEL HAMBERG, University of Maryland

Statistical Cost Functions (Joint session with the Econometric Society)
Chairman: JOEL DEAN, Columbia University
Papers: JOHN R. MEYER, Harvard University; JACK JOHNSTON,[7] Harvard University; ALLEN R. FERGUSON, RAND Corporation
Discussants: GEORGE BORTS, Brown University; RICHARD RUGGLES,[1] Yale University

5:00 P.M.

Business Meeting

6:00 P.M.

Dinner Meeting of the Executive Committee

[5] For citations, see March, 1958, issue of the *American Economic Review*, pages 254-255.
[6] Published in the March, 1958, issue of the *American Economic Review*.
[7] To be published in the *Review of Economics and Statistics*, November, 1958.

THE purpose of the American Economic Association, according to its charter, is the encouragement of economic research, the issue of publications on economic subjects, and the encouragement of perfect freedom of economic discussion. The Association as such takes no partisan attitude, nor does it commit its members to any position on practical economic questions. It is the organ of no party, sect, or institution. Persons of all shades of economic opinion are found among its members, and widely different issues are given a hearing in its annual meetings and through its publications. The Association, therefore, assumes no responsibility for the opinions expressed by those who participate in its meetings. Needless to say, the papers presented are the personal opinions of the authors and do not commit the organizations or institutions with which they are associated.

JAMES WASHINGTON BELL
Secretary

VEBLEN CENTENARY ROUND TABLE

SOURCE AND IMPACT OF VEBLEN

By Joseph Dorfman
Columbia University

That the American Economic Association should celebrate the hundredth anniversary of Veblen's birth may itself be taken as recognition of his impact on the growth of economic thought. That his work continues to be a source of considerable controversy is indicative of its vitality. Some men effectively catch the drift of development and have a vision of things to come. Such men become active forces in that very development and their names become landmarks and turning points. Time alone is the final judge of a candidate's right to inclusion in this select list. For Veblen, time has rendered its verdict, as is evident in the very fact that we are gathered here.

Veblen's story is complicated by his historical setting, his personality, and his style of writing. Perhaps as the biographer of Veblen, I have an advantage, slight though it may be, in the task of clarifying the picture of the man and his role. It is almost a quarter of a century since I sent *Thorstein Veblen and His America* into the world. Since then, additional information on his career and background has become available, and many things have happened in the world of affairs and the world of economic science. These developments should provide the opportunity for a more mature understanding of this enigmatic figure. It is therefore, in the light of what I like to think of as a richer experience but which may well be excessive boldness, that I attempt an assessment of the source and impact of Veblen.

In Veblen, we have at least two men. There is the economist and there is the artist—a most unusual combination. Generally the two do not mix. In the history of Anglo-American economics which actually forms one mighty stream, the only other case that comes to mind is that of David Hume.

Let me take up Veblen the artist, first. Veblen is a person interested in writing and communication. Of his style, the prominent novelist, Hans Storm, wrote that it was "faintly suggestive of the great geographers in its impressive unornateness and stolidity in front of new discoveries, but refined and yet again refined and pared until it lay hard against the bare rock and resisted by virtue of the hardness of the rock itself. . . . [Veblen] brought into economic writing the rules of good poetics . . . in which every word is understood not only in its im-

mediately purposeful meaning, but with all its nimba of picturesqueness, background, and suggestion." As a writer, too, he is full of whimsy and humor. He loves to tease, to exaggerate, to present fantastic and poetic images, to utilize symbolism and allegory and to mobilize folklore. He will even use archaic words and phrases to fit the mood of an archaic economic and social order. As he unfolds various aspects of Western civilization, he is a throwback to the saga tellers of his Norwegian forebears and the writers of epic poems with their tales of intermingled tragedy and comedy. The anthropologist and archeologist in him, fed by his northern pride and heritage, provided him with an almost inexhaustible arsenal of examples, illustrations, and "models."

As he spins tales, so he spins webs that entrap the reader into the recognition of the seriousness of phenomena that he may have taken for granted. Veblen merely picked his Don Quixotes from the realm of economics. Behind the humor and the dead-pan, there is often a stark tale that is reminiscent of the privileged court jester. Veblen's shafts respect no class or group. There are no exceptions, not even himself. With his artistic temperament went the peccadilloes that are conventionally associated with it.

Having been reared in one culture and having matured in another, Veblen had a heightened instinct of curiosity. That curiosity received in the course of his academic training in the seventies and the eighties the benefit of the discipline and inspiration that seminal minds and provocative teachers give to promising youth, thereby enabling them to go beyond and transform the established positions—to lift them to a higher plane, as it were. For Veblen was indeed fortunate.

At sturdy Carleton College, he studied under the profound philosophic economist, John Bates Clark, who was developing on the one hand his comprehensive marginalist economics, beginning with his own version of marginal utility, and on the other hand formulating his creed of Christian Socialism. Clark soon saw the promise of Veblen and encouraged him to go on to graduate work at Johns Hopkins with philosophy as his major and economics as his minor.

His stay at Johns Hopkins was brief but rewarding. He had the advantage of studying logic with Charles S. Peirce, the founder of pragmatism. He was impressed with the lectures of George S. Morris, the teacher of John Dewey, and one of the advance guard of the trained Hegelians from the German universities. There was on the social science staff at Johns Hopkins his contemporary, Richard T. Ely, the *enfant terrible* of economics, who was already impressed with Veblen. Veblen established lifelong friendships with fellow students, for example that future noted American historian, James Franklin Jameson.

Veblen then went to Yale, where he had the benefit of the William Graham Sumner of the *Folkways* and the gruff philosopher, Noah Porter, who was making a last stand on behalf of the traditional common-sense philosophy against the onrush of Spencerian evolution and the Kantian and Hegelian idealist systems.

Thus at the very beginning of his career, Veblen stood in the thick of the battle of conflicting philosophic systems. But fortunately for us he left philosophy in the nineties for economics, although he never lost his original interest.

As an economist, his relation to his times is doubly significant, for he played a dual role. He was a theorist and catalyst of reform. He came upon the scene between two ages of social and intellectual ferment. Just as in the realm of affairs, so in the realm of knowledge there are great tides. Periods of reform and reconstruction rise to great crests; then come troughs marked by consolidation of gains, conservatism, and sometimes reaction. The last great crest of the seventies and eighties was marked by the triumph of the doctrine of evolution in science and a world-wide movement of political and social reform. In economics it was epitomized by the wave of interest in the German historical school. In its native land, this movement had sought to broaden economic analysis beyond the narrow foundation of the older classical school of economics and to that end it had attempted to develop such powerful instruments of research as statistics and history including comparative economic development. It also sought to give greater scope to the ethical nature of man than the dominant vulgarizers of the classical economics would permit.

In the realm of policy it sought to meet the wave of discontent and the threat of socialism by a variety of reformist devices. These included the appeal to the churches to take an active part in solving such critical social questions as the relation between employers and employees, the appeal to government for easing the restrictions on trade-unions, and the support of national social security legislation such as workmen's compensation, old age and sickness insurance. It included also a concern with the problems of conserving natural resources and regulating "natural monopolies." On the one side, the movement seemed to provide the beginning of a richer synthesis for expanding knowledge and on the other side a basis for policies that would check the damage of excessive individualism without embracing the socialism of Marx.

To the younger generation of reforming American economists, encouraged by such eminent elders as General Francis A. Walker and Carroll D. Wright, this German historical movement, flanked as it was by a similar movement in Great Britain, seemed to offer the promise of adaptation to the needs of the developing American economy. As

such it provided a basis for the "new economics." This included the revised classical tradition, which embraced the doctrine of marginal utility. In accordance with their Anglo-American heritage, the exponents thought that economic reform could be achieved largely by voluntary organizations and by state and local units more than by the national authority. "Planning" was city planning and "regulation" was largely that of railroads and other "natural monopolies" by state commissions.

After the turn of the century came stabilization, security, and consolidation, of frowning on innovation and the deprecation of further reforms. The turning away from "social inventions" had its counterpart in the lack of enthusiasm for any kind of innovation in economic analysis. Thus, for example, the original leader of the movement of mathematical economics, Simon Newcomb, voiced doubts of the usefulness of further work in this area and he expressed the hope that economists would turn their energies to educating the public in the simpler "abstractions," as he called them, of the Ricardian economics of an earlier age. Economics had only just begun to have autonomy as an important area in its own right rather than as a limited, narrow topic in the course in moral philosophy. In such heated political struggles as that over "free silver" there was not a little feeling that moderation in matters of policy was essential to protect the infant profession. Narrow practical and intellectual ends became dominant, or so it seemed.

Of the older generation of leaders of the movement for reconstruction, some went into administrative work, others specialized in less controversial subjects such as public finance, and still others devoted themselves to the more abstract problems of the rationale of a static state. But even these protected themselves against the charge of lack of immediate, practical reference by claiming that their analysis tested the validity of the existing economic system's right to survival. Social innovation was considered outside the realm of science.

But just because liberal reform found hard sledding, there appeared to be a greater need for a basic revaluation and reorientation. For this the special qualities and abilities of Veblen seemed particularly valuable. He was well equipped to survive intellectually in an age where basic thinking appeared to be at a discount. He just escaped being an immigrant. In effect, he was an "outsider" and therefore not easily engulfed in the passing mood. He had a special feeling for languages and old-world, particularly northern, sagas and cultures. His extraordinary linguistic equipment opened to him developments and literature in a variety of areas and lands. His cosmopolitan scholar's pervasive sense of history, along with his knowledge of anthropology, psychology, and

the biological sciences, gave him perspective. Having received his doctorate in philosophy, he had special equipment for theoretical discussion and the relation of economics to other fields of knowledge. He had the comprehensive reach of the student of culture, the precision so essential for systematic thinking, and that rugged consistency, courage, and independence that refuses to bend to the expediencies of changing winds and fashions.

It is these qualities that distinguished him from the outset. With his strong sense for the fundamental, he fixed attention on central economic institutions of his time—and indeed of our own time; for example, the corporation and the technological process. Veblen implicitly recognized that the corporation is a mighty instrument for organizing production and promoting efficiency. But he regarded it as something much more than a mere embodiment of external mechanical forces. Rather it was a complex organism that lent itself to manipulation by passions and spirits that ran counter to the objective of its function in the economy. More fundamental still, it gave play to the intrigues and rivalry of inner groups whose habit of thinking in terms of money as an abstract aim overlay their functions in the institution. This habit at times ran counter, also, to the needs of the community, when it bred a reduction of output and employment to maintain solvency or increase profits. As the corporate form gains increasing sway over the economic life of the community, the consequences, if left uncontrolled, become all the more serious.

Veblen's view of technology, like his view of the corporation, was intimately related to his conception of human nature. Man to Veblen was a natural force acting upon all other forces of nature. Man was distinguishable by his special characteristics of imagination, playfulness, economic effort, and tasteful production. To a large extent, science and the machine are embodiments of these attributes. But there is an aspect of machine technology which leads to purely reflexive and habitual activity and sometimes machine technology has been abused to produce ugly things. This explains Veblen's simultaneous emphasis and admiration of technology as well as occasional concern over its effects. The techniques and institutions that man creates have a way of turning around, creating a life all their own and threatening to become his masters and gods. Veblen saw constantly re-enacted in history a dramatic saga between man's material interests and the institutions he creates to give them expression.

Veblen's views of technology, human nature and corporations, money and economy, do not add up to a closed structure of thought in the typical nineteenth-century sense. Such systems began with an overwhelming major premise and ineluctably drove, fall the chips where

they may, towards a grand, simplified, logical conclusion; for example, a David Ricardo with his stationary state, an August Comte with his positive religion, a Karl Marx with a classless society, and a Herbert Spencer with his idealized order of free contract where even a policeman would not be needed. Veblen is less doctrinaire, and less dogmatic. Where the authors of the great closed systems seek to dominate and organize, Veblen suggests, tempts, pleads, and even hypnotizes. In his method he is more evolutionary, more sensitive to psychological forces, more aware of the relations between the social sciences, and more cognizant of surprising changes in the configuration of forces. He combines forces and elements often thought of as disparate or irrelevant to each other. This is the reason why he occasionally surprised and even shocked his reader or fellow economist. His approach makes him at home with the spirit of the twentieth century and projects his influence forward.

Although bereft of the attractions of the great system-makers and the magic of the great programatic reformers, his influence has been wide, pervasive, and enduring. Vital and original minds were drawn toward him from the beginning.

There were, first of all, his own students. Here as elsewhere I can only refer to a few because of the limitations of time. Veblen moved Herbert J. Davenport to cleanse the main tradition of economics of apologetics with his critical volume, *Value and Distribution,* and then his general treatise, *The Economics of Enterprise,* which still stands as a classic of modern price analysis. There was Robert F. Hoxie—perhaps the finest analytical mind that the United States produced in the field of labor—who developed a functional analysis of types of unions with a special emphasis on what he called business unionism. There was Ezekiel H. Downey, a pioneer in the first great step of social security legislation; namely, workmen's compensation laws. In his classic defense of such legislation, *History of Work Accident Indemnity in Iowa,* he explained that since the human organism was imperfectly adapted to a mechanical environment, work injuries are attributable to inherent hazards of industry and should be met by industry.

There was Wesley C. Mitchell who found not only inspiration for his pioneering studies on business cycles and the money economy in Veblen's work but also such specific important relationships as Veblen's emphasis on the capitalization process in his business cycle theory. As Mitchell wrote in a private letter in 1910, while working on his monumental *Business Cycles:* "The theory propounded [on the breeding of crises] is fairly close to Veblen's on the most important point—a decline in prospective net earnings leads to a shrinkage of business credit and thus brings on a liquidation of outstanding accounts."

Furthermore, in Veblen's emphasis on "behavior" and men's actions rather than their introspective rationalizations lay much of the stimulus that re-enforced Mitchell's bent for systematic, quantitative analysis and drove him on to making such work a permanent, basic feature of economic theory.

There was Walter W. Stewart, who in the field of modern central banking made effective use of Veblen's distinction between industry and business. In his diagnosis of Britain's loss of competitive position in the thirties, he ascribed the larger and more permanent part of the difficulties to the lag in technological advance and accumulated industrial shortcomings rather than to the current financial maladjustments. In this country, Stewart, like Mitchell, was influenced by Veblen to use quantitative data, both financial and industrial, to test from time to time the performance and adequacy of our banking institutions. Finally, let me just mention DR Scott, author of *The Cultural Significance of Accounts,* as further evidence of the stimulus and influence of Veblen on his students.

Let us now turn to his influence on his contemporaries. Perhaps the best external evidence of the wide recognition of Veblen among the most distinguished economists of the day was the petition in 1925, with nearly 225 signatures, requesting the nominating committee of the American Economic Association to select Veblen as president. Among the signers were ten future presidents: E. F. Gay, Alvin H. Hansen, Frank H. Knight, Paul H. Douglas, Frederick C. Mills, E. G. Nourse, Sumner H. Slichter, Jacob Viner, A. B. Wolfe, and the current president, Morris A. Copeland.

The constant references in our literature to *The Theory of Business Enterprise* at any event belie the misgivings that Veblen originally had about publishing the book, misgivings chiefly, he said, "that it would pass unnoticed by the gild of economists to which it is addressed."

More revealing of his impact was the seepage of his ideas into a wide variety of original enterprises in economics. There was his impact on Carleton Parker, who pioneered in focusing the attention of economists and management on the need to understand the psychological forces in the study of industrial relations. There was Veblen's impact on John R. Commons' work, especially *Legal Foundations of Capitalism* and *Institutional Economics,* not only through his distinction between business and industry, but more specifically through his development of such concepts as the "going concern" and "intangible property" as distinct from "tangible property." As an admirer of both, A. B. Wolfe, stated: "Commons arrived at substantially the same, though greatly amplified conclusions as to the role played by intangible assets." Veblen was suggestive, also, to the son of his old Carleton

teacher, John Maurice Clark, as he sought to work out a positive position vis-à-vis Veblen's and Davenport's criticisms of John Bates Clark, centering on social productivity versus private acquisition. Veblen had an influence on such business cycle theorists as Alvin H. Hansen which dates back to the days when Hansen was working on his doctoral dissertation, *Cycles of Prosperity and Depression,* and runs through his later productions in Keynesian economics.

In the field of consumption patterns, of course, Veblen's attraction has been enormous, especially in such stimulating studies as those of Theresa S. McMahon, Hazel Kyrk, and Jessica B. Pexiotto. There is also the impact of Veblen's "pecuniary emulation" and "conspicuous consumption," especially when given a less colorful name, such as the "demonstration effect"—the increase in consumption expenditures through contact with superior goods—in bringing about a revision of the conventional demand theory and the special case, the "consumption function," as in James S. Duesenberry, *Income, Saving and the Theory of Consumer Behavior.* Falling into the same category and given increasing attention especially by those interested in geometric presentation was the case that has acquired his very name, the "Veblen case." This has been well described by Sidney Weintraub, in *Price Theory,* as consisting of goods that "appeal to the snob as a vehicle for 'conspicuous consumption' , . . only when the price goes sufficiently high to prevent these items from being widely bought."

In the areas of the regulation of corporations and security markets, Veblen's works have had a practical effect. Witness the popularity of Berle's and Means's, *The Modern Corporation and Private Property,* and of a number of other provocative works dealing with the "managerial revolution" and the corporation and the "organizational man" as a way of life. Incidentally, Brandeis cited Veblen in a famous minority decision against the encroachment of the great corporations *(Lee* v. *Liggett Co.).*

In the field of economic history, there immediately comes to mind Harold A. Innis, the one Canadian economist who has been President of this Association. He noted as early as 1929 that Veblen was the "first to attempt a general stock taking of general tendencies in a dynamic society saddled with machine industry just as Adam Smith was the first to present a general stock taking before machine industry came in." Veblen's story in 1915 of how aristocratic and Imperial Germany exploited the developments of the machine technology turned out to be so prophetic of the rise and fall of Nazi Germany that a new edition of *Imperial Germany and the Industrial Revolution* was called for. Currently, economic historians have suggested its applicability to the case of the Soviet Union.

In recent years, *An Inquiry into the Nature of Peace and the Terms of Its Perpetuation,* along with *Imperial Germany,* has come to the fore as among the few books of the World War I era that have endured. Here Veblen's technique has its fullest scope. He takes up in its widest background and with a grand perspective of economic and international relations the greatest of all problems and makes his contribution towards a reconstruction of the world on a more peaceful basis.

Of his predictions and prophecies, which have so often been accurate, I shall only refer to one. This is a prediction that has not been generally noticed. In the closing page of *The Theory of Business Enterprise,* he observed that the "*full* dominion of business enterprise was necessarily a transitory dominion" (italics mine). That dominion is now less complete than ever.

Veblen's early vogue began in the realm of literature, through the reception accorded his one really popular book, *The Theory of the Leisure Class*. Though originally, as Veblen put it, "opinion seems to be divided as to whether I am a knave or a fool," the book had the good fortune to be enthusiastically reviewed as a work of genius by the dean of American letters, William Dean Howells. In portraying the effect of pecuniary standards on culture, Veblen dissected men's most cherished values in their current form and showed that they were curiously wrought-out products of a historical process stamped with the dollar sign. The full weight of this was caught by his readers only in later years, especially in times of depression and war. Today the book is also increasingly appreciated for the guidance it offers in raising the economic level of underdeveloped countries and, above all, for strengthening the national defense. Again this very month (on December 2), the *New York Times* editorial page reminded the country that Veblen long ago called attention to the "problems which arise because of men's slowness to adjust their cultural attitudes to the rapid changes imposed by scientific and technological advance."

Certainly no economist of his and our day has commanded the respect of so many leaders in so many other disciplines: in literature and the fine arts, philosophy, psychology, sociology, political science, anthropology, history and even the biological and physical sciences.

Veblen is a "philosophical radical" in an American and twentieth-century setting. Unlike his British counterparts, he was free from Benthamite psychology, was not a system-builder, and was without a positive political program. Yet his indirect influence upon men active in public affairs was very considerable, particularly following the Great Depression when many of our economic institutions became subject to criticism and revision. Veblen had made it abundantly clear that "prosperity" of business enterprises was not necessarily coincidental

with the welfare of the community at large. During this period, some of Veblen's ideas, available for decades, fell at last on fertile soil and took root. His regret might have been that so many of them in application led to a further aggrandizement of the state. So while it may be impossible to point to a single piece of legislation that he would have proposed, there can be no doubt that men who had never read his books came unconsciously under the influence of his thought. No one can say exactly when or how Veblen's ideas, once widely regarded as radical and violently rejected by most of one generation, gradually became a part of our accepted common stock of ideas. We do know, however, that historically such slow and pervasive infiltration is characteristic of the impact of an intellectual forerunner.

How did he do it? Here is a man who was often inchoate, obscure, tangential, unintelligible, and one-sided. He made his generous share of mistakes. Ultimately, his value lies in his role as an emancipator of the human mind. He tears down the walls of the institutions, prejudices, and fond illusions that imprison the human spirit. He sharpened the use of reason and presented it as a tool to those who would penetrate to the secrets of society. He transcended the function of the economist, but he also fulfilled it. He became a landmark in the cumulative growth of the science and the development of Western culture.

THE INFLUENCE OF VEBLEN ON MID-CENTURY INSTITUTIONALISM

By Allan G. Gruchy
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A third of a century has passed since Thorstein Veblen made his last analysis of the American economic system in *Absentee Ownership and Business Enterprise in Recent Times* (1923). This centennial year is an appropriate time to make an evaluation of the significance of Veblen's economics. In recent decades he has had much to do with the shaping of American economic thought. His influence has given rise to what is best described today as a neo-institutionalist movement. This is a movement which, while differing in a number of important ways from Veblen's evolutionary economics, nevertheless preserves the main features of his economics. The ways in which Veblen continues to influence the present-day institutionalist movement can be shown by considering institutionalism as a body of economic theory, as a theory of the economic system, and as a set of economic policy recommendations. The stamp of Veblen on these three aspects of mid-century institutionalism is quite evident.

I

First as to the theoretical foundations of Veblen's institutionalism and that of his successors up to the present. When Veblen came on the academic scene late in the nineteenth century, he found that the conventional economics of his day was largely limited to an analysis of highly competitive economic behavior. He found Marshall's economics of pure competition to be deficient on two grounds. It gave little consideration to what Veblen describes as "partial monopolies" or to what we today call oligopolistic enterprises, and in addition Marshall's economics provided no analysis of what Veblen refers to as the "aggregate product" or "gross output of industry"; that is to say, no place for what we now call aggregative economics. Although Veblen was clearly impatient with formal economic theory, his theorizing was nevertheless highly original. In the field of microeconomics he was one of the first to make what we now call the administered price a principal matter for investigation. Although he had no formal analysis to explain the interrelations between price and quantity in oligopolistic industries, he had enough of the essentials of the economics of oligopoly to make the problem of the administered price a key consideration in his economic analysis.

Equally important is the fact that Veblen developed an aggregative

economics to supplement his economics of oligopoly. His aggregative economics is worked out in *The Vested Interests and the State of the Industrial Arts* (1919) and also in *The Engineers and the Price System* (1921), where he lays a theoretical foundation for the national economic planning program which inevitably turned him to aggregative considerations. Like his well-known contemporary, John A. Hobson, Veblen became interested in what he describes as the nation's "aggregate product" or "total gross output," precisely what came to interest Keynes and his numerous followers a decade and a half later. In working out his aggregative economics Veblen develops a rudimentary form of the nation's economic accounts in which he offsets actual total national output or total supply with various consumption and investment items or components. Veblen's object is to show that some of the consumption component of total output constitutes a surplus or net product, which goes to the absentee owners rather than to the working population. In Veblen's regime of workmanship his rudimentary national economic accounts are projected in the form of a national economic budget, which is used to give guidance to the nation's product and income flows with the aim of stabilizing economic growth at a full employment level without inflation.

In his theorizing about the nation's economic accounts, Veblen achieves a fusion of micro- and macroeconomics. The specific operations of the economy's key industries are analyzed in terms of their effect upon the nation's total output of final goods and services. Veblen found it necessary to look at both sides of the coin—at the specific price, wage, and profit relationships of the private enterprise system, and also at the broad aggregates of total production, consumption, and investment. He draws a contrast between the nation's price-income system on the one hand and its industrial or production system on the other. Veblen's analysis runs in terms of the disharmonies that arise between the nation's price and production systems. According to his interpretation the specific price policies of the large key industries, in distorting the flows of personal income, also distort the nation's aggregate consumption and investment patterns. Charging what the traffic will bear, or, as Veblen puts it, maximizing net returns in the microeconomic world, is matched by less than maximum total output, by disproportionate total consumption, and by inadequate total investment in the macroeconomic world. If Veblen had not had at least an elementary concept of national income accounting, he would have been less successful in revealing the connections between the specific price-profit-wage relationships of the economy and the general relationships among total production, consumption, and investment. While calling attention to the movements of economic aggregates, Veblen never fails

to show the connections between these movements and the specific operations of individual firms.

II

During the depression years, 1930-39, considerable progress was made by later institutionalists in improving the fusion of micro- and macroeconomics which had been started on its way by Veblen. In the area of microeconomics the big advance in this period was heralded by Gardiner C. Means's work in the field of administered prices, which was an extension of Veblen's earlier interest in the price controls exercised by large partial monopolies. Means's concern with administered prices did not lead him to develop formal theory of the type that we find in Professor Chamberlin's *Theory of Monopolistic Competition* (1932). Institutionalists at this time were more interested in the relationships between prices, profits, total production, and total employment. The administered price was important to these heterodox economists, not because it was a category of price which opened up a new world of formal theorizing, but because it was associated with distortions in the flows of income and output which called for a fresh approach in the area of economic policy formulation. In the thirties, institutionalists were prepared to make recommendations for a control of administered prices which would prevent these prices from contributing to economic instability and retarded economic growth. It was at this point in their analyses that the depression-period institutionalists moved from microeconomic to macroeconomic considerations. Interest in aggregative economics among the institutionalists during the thirties stemmed from their concern with national economic planning as a remedy for depression and secular stagnation. After 1929, Mitchell, Clark, Tugwell, Means, Ezekiel, and others of a similar approach focused their attention on fluctuations in total output, consumption, and investment. But this interest in aggregative economics had a different emphasis or direction than that of the aggregative economics of Keynes and his followers. In the mid-thirties, Keynes was clearly trying to meet the special problems of the depression phase of the trade cycle. His approach to this problem was primarily financial. It was essentially the Treasury approach which found expression in the trinity of fiscal, monetary, and public works policies. Keynes did not have an over-all planning or national economic budget approach to the problems of depressed employment and low total output. His interest lay, instead, in the financial aura which surrounds the private business system. He was at that time concerned with the financial epiphenomena in which businessmen and Treasury officials are so interested; that is to say, with problems of liquidity preference, business expectations,

speculative motives, money supplies, and the efficiency or profitability of marginal increments of capital.

The situation was different with the institutionalists; with them interest passed from the cyclical to the secular or the long range. After 1929, what commanded the attention of the institutionalists was not cyclical aberration but secular disease—the disorder of sustained but retarded economic growth. During the depression years the institutionalists approached aggregative economics from the economic planning or economic budget point of view rather than the Keynesian Treasury standpoint. In analyzing the failures of the capitalistic system in the thirties the institutionalists followed not Keynes but Hobson and Veblen. Going beyond Keynes, the depression-period institutionalists penetrated beneath the financial aura of the business system to inquire into the growing monopolization of economic activity, the increasing inflexibility of the price system, the resulting distortions of the nation's income and product flows, and the inadequacy of the institutional arrangements of the existing economic system. What were important to the institutionalists were not matters such as liquidity preference, speculative motives, variations in money supplies and interest rates, business expectations, marginal efficiencies, and all the other paraphernalia of the "business outlook." Instead, the depression-period institutionalists were searching for more basic total production, consumption, and investment relationships, on the one hand, and specific price-income relationships, on the other hand, which would contribute towards sustained and adequate economic growth. These were economic matters which came into focus not in the financial budget of the Treasury but in the economic budget of the national economic council or central economic planning staff.

What delayed the further development of the aggregative economics of the institutionalists prior to 1939 was not the lack of economic theorizing but the lack of national income statistics such as are now provided by the nation's economic accounts. Prior to 1939 both the theorizing of the institutionalists about aggregate output and their policy recommendations, which pointed in the direction of national economic co-ordination, had to wait upon further developments in the field of national income accounting.

III

Since 1945, the fusion of micro- and macroeconomics first worked out by Veblen has been considerably improved upon by the mid-century institutionalists. When World War II broke out, national income accounting had been perfected to the point where national economic budgets could be constructed and used effectively in working out programs to meet the economic needs of both the armed services and

the civilian population. In the transition from war to peace there was a related transition from the wartime to the peacetime national economic budget. Since 1945, economists of the first Council of Economic Advisers, the Conference on Economic Progress, the National Planning Association, and the Joint Economic Committee have accepted Gerhard Colm's proposition that "there is an economic relationship between total production, investment, and consumption which is essential for a steadily expanding economy," and which can be stated in quantitative terms. These economists have moved steadily forward in uncovering such growth-fostering relationships. Their postwar national economic budgets supply the quantitative versions of the fundamental economic relationships, which were missing in the aggregative economics of the depression-period institutionalists. Present-day institutionalists now look to the annual and long-term national economic budgets as the point of departure in their analysis of the requirements of national economic co-ordination, which aims at sustained economic growth and full employment without inflation.

Veblen's interest in the administered prices of large industrial corporations has been widened since 1945 by those sympathetic to his work to include considerations of price inflexibility in other areas of the economy where it did not exist to any great extent in Veblen's time. Today the administered industrial price is matched by the inflexible wage rate of the industrial union and to a lesser extent by inflexible agricultural prices. The scope of the inflexible price has now been widened to the point where the free market price is conspicuous by its absence from the world of economic affairs. This diffusion of the system of inflexible prices and wages throughout the economy in general is what has led the mid-century institutionalists to make price and wage policies key considerations in their programs to secure sustained and adequate economic growth.

The spread of price inflexibility in the modern economy has significant consequences for total output and its consumption and investment components. Inflexible prices and wages lead to many distortions in the nation's corporate and personal income flows, which show up aggregatively as distortions in the nation's total output and its various components. Imbalances in the nation's price-cost structure have their counterpart in the form of imbalances in the nation's total output, consumption, and investment relationships. Sustained economic growth requires a wage-profit ratio which is appropriate to whatever rate of growth is set up as the national goal. Likewise, sustained economic growth requires a consumption-investment balance of the same general nature. Deficiencies in the operations of the current economic system are attributed by the mid-century institutionalists to the appearance of wage-profit and consumption-investment ratios which are not sustainable.

With the aid of improvements in national income accounting they have made considerable progress in working out the income and product relationships which would sustain economic growth. Their national economic budgets for full employment and sustained growth are the culmination of a long theoretical development since the fusion of micro- and macroeconomics which Veblen pursued in the first two decades of this century.

The fusion of micro- and macroeconomics, which is the property of present-day institutionalists, clearly owes a great deal to the original thinking of Veblen. He laid down the broad outlines of this fusion, which have remained unchanged to this day. Much detail has been filled in on the broad theoretical canvas which was passed on by Veblen to later generations of economists. Some of this detail has been supplied by noninstitutionalists, as has happened before in the development of institutional economics. Although the institutionalists have borrowed extensively and wisely, they have not veered from the broad theoretical objectives set up by Veblen in the years 1890 to 1925.

IV

So much for the theoretical basis of current institutionalism which reveals so much Veblenian influence. We must now consider the theory of capitalism of the mid-century institutionalists and see how it compares with that of Veblen. According to Veblen's interpretation, the strategic factor influencing economic development is technological progress which gives rise to the accumulation of capital. Technological progress and the accumulation of capital have a number of important consequences. They change the character of capital, enlarge the firm's scale of operations and raise the marginal productivity of capital, alter the structure and functioning of the economic system, and change the psychological atitudes of those who participate in the nation's economic affairs. These consequences of technological progress and capital accumulation have the general effect of collectivizing economic activity. Capital accumulation is not simply a matter of piling up steel mills and power stations. It is this and much more. It is a painful, destructive process which over time continuously alters the nation's general economic pattern, and in so doing pushes the nation on towards more collective action in business, agriculture, and the labor world.

Present-day institutionalists accept Veblen's theory of capitalist development up to this point. But beyond it there are major differences in the theory of capitalist development of Veblen and later institutionalists. Veblen was no Hegelian who stands on the hilltop and points out the final stage of mankind's economic progress. On the contrary, he clung to the view that there is nothing teleological or predestinarian about economic development. He was certain of only one thing; that is

to say, that the capitalist system would undergo continual change. Present-day institutionalists agree wholeheartedly that no economic system can stand still, while being subject to the growing pressures which build up behind the technological and capital accumulation fronts. Disagreement between Veblen and latter-day institutionalists arises in connection with the possible future directions that capitalist development may take. Veblen asserted that capitalism could move in only one of two possible directions; namely, fascism or socialism. Unlike Veblen, later and present-day institutionalists see a number of alternative lines of development which capitalism may follow in the future. These alternatives include welfare or controlled capitalism, laborism or democratic partial socialism, full socialism, communism, and fascism. The mid-century institutionalists consider regulated or welfare capitalism to be the most probable outcome of American economic development in the calculable future. This difference in interpretation of the probable course of capitalist development can be attributed in part to the different economic eras in which Veblen and later institutionalists lived.

There are a number of other disagreements between Veblen and later institutionalists. Institutionalists do not today accept Veblen's oversimplified views concerning the effects of the machine process on human nature. Although they agree that the machine process as an environmental factor does influence human behavior, this influence is not as simple or direct as Veblen believed it to be. Nor do present-day institutionalists accept the twofold class division which Veblen erected on the basis of his technological interpretation of history. The collectivizing influence of the machine process has worked out in a complicated manner to produce a plurality of classes, which shows little tendency as yet in the United States to dissolve into the duality of which Veblen makes so much. Furthermore, the mid-century institutionalists do not share Veblen's view of the role of the state. In their view of welfare capitalism the central government, far from being a vehicle of exploitation as portrayed by Veblen, is instead representative of a number of diverse interest groups. Under the guidance of this Olympian government of theirs, the institutionalists of today see no abrupt demise for the capitalistic system as envisioned by Veblen. On the contrary, they see a merging process, now well advanced, in which the classic form of capitalism merges during this century into a form of welfare or controlled capitalism, a process in which the older private enterprise system merges into what is best described as a public-private enterprise system.

V

The third and final area that interests us in our analysis of the influence of Veblen on mid-century institutionalism is the area of economic

policy. Veblen saw no hope of eliminating the imbalances or distortions in the area of specific wage-price-profit relationships or in the area of total output, consumption, and investment relationships under the present private enterprise system. He therefore recommended a shift from capitalism to socialism, and the construction on this socialistic base of an economy directed towards sustained and adequate economic growth. His objective was a planned socialistic economy. In *The Engineers and the Price System* (1921), Veblen discusses the three requirements for the successful operation of his regime of workmanship. First, there must be established a national planning board, or as he calls it, a "central industrial directorate" which is the prototype of our Council of Economic Advisers. Its main responsibility would be to provide over-all direction for the economy. Second, the central directorate must, after surveying the nation's resources, draw up a national economic budget, or what Veblen calls "organization tables to cover the efficient use of the available resources and equipment." The national economic budget would establish the nation's production goal and would also indicate the division of this total output among the various claimants in accordance with a national priority scheme. Third, in Veblen's regime of workmanship the goals projected in the national economic budget would be achieved by putting into practice a number of economic policies and measures, which would be integrated within the framework of the national economic budget.

The mid-century institutionalists' economic policy recommendations also look towards some form of national economic co-ordination but a type which is much less drastic than Veblen's socialistic planning. They are convinced that the price-cost and consumption-investment imbalances of the modern private enterprise economy can be largely eliminated while at the same time the main features of the private enterprise system can be preserved. As with Veblen, they approve the setting up of a central economic planning organization to co-ordinate public and private economic policies and to provide over-all direction for the nation's economy.

It should also be pointed out that the mid-century institutionalists, like Veblen, find it necessary to use the national economic budget as a point of departure in providing over-all guidance for the nation's economic system. But where economic guidance is provided, some quantitative standards are necessary. These standards are found in the national economic budget which shows in a quantitative fashion the total output, consumption, and investment requirements of stable and adequate economic growth. Much advance has been made in the quantifying of national economic goals since the early twenties when Veblen constructed his rudimentary national economic budget. The production

and financial relationships that are consistent with the goal of sustained and adequate economic growth can now be indicated with the help of input-output studies, ratio analyses based on the movement of gross national product and its components over time, and national flow-of-funds accounting as it has been developed by Professor Morris Copeland and the Federal Reserve Board. These studies now enable us to construct what may be called "double-barreled" national economic budgets which show not only the real output, consumption, and investment requirements for a given rate of economic growth but also the financial flows that are necessary to finance these real product requirements.

The mid-century institutionalists also follow Veblen in using the national economic budget as a basis for the co-ordination of economic policies. The distribution of gross national product as outlined in the national economic budget is to be achieved, in the opinion of the institutionalists, only by developing an appropriate blend of price, wage, fiscal, and credit policies. The desired product and income flows can be secured by making the necessary adjustments in wages, prices, taxes, and credit supplies. But these adjustments cannot be made successfully by a few government officials in the Treasury and the nation's central bank. They must be made co-operatively by government, business, labor, and agricultural representatives who are informed of the nation's economic goals, as laid down in the national economic budget, and who can see the impact of various economic policies on the nation's income and product flows.

Following Veblen, the mid-century institutionalists do not accept the "control-tower" approach to national economic policy formulation which envisions fiscal and monetary policies emanating from the inner recesses of the governmental structure, very much as instructions are radioed out from the control tower of a busy airport to incoming and outgoing aircraft. When these Keynesian-inspired economic policies of the Treasury and the central bank prove to be ineffective, the government then calls helplessly for price and wage restraint from powerful economic groups, which are no longer very much impressed with the sanctity of Treasury or central bank pronouncements about the state of the economy. The basic weakness of this control-tower approach to economic policy formulation, in the opinion of the institutionalists, is that it fails to bring together all those parties who are in a position to influence the determination of economic policies and goals. It substitutes management for consultation and persuasion, which are the only avenues to agreement among equally powerful economic groups. According to present-day institutionalists economic policy formulation is now moving on to a new stage in its development where old-fashioned manipulation of the economy by the government is being replaced

by collaboration among government, business, labor, and agriculture within the framework of the national economic budget. This policy-making approach of the mid-century institutionalists duplicates the over-all approach of Veblen but is tailored to meet the needs of our mid-century economic and political circumstances. Veblen, of course, would not have approved of this tailoring; he would have much preferred the old garment of full socialism.

The difficulties that are inherent in the policy proposals of the neo-institutionalists are of a major order. The Olympian theory of government which plays a fundamental role in their policy formulations has not yet been successfully translated into practice. It remains to be seen whether or not it is possible to achieve a successful working out of joint consultation at the top level among the nation's major economic groups. Exhibiting a strong pragmatic bias, the economists of the first Council of Economic Advisers, the Conference on Economic Progress, the National Planning Association, and of similar organizations are prepared to push their economic thinking along these lines with the hope of securing a *modus operandi* which, as they see it, may save capitalism. Only time can judge the wisdom of their views.

We may conclude by observing that, although it is quite evident that Veblen is now outmoded in many ways, it is also apparent that the broad contours of his economic thought have stood the test of time successfully. Institutionalism is a resilient body of economic thought which absorbs what is worth while from other areas of economic analysis without losing its own identity. The essential nature of institutional economics has not changed over the decades, nor will it change in the future. To the institutionalist the economic system will always be what an event was to the great mathematician-philosopher, Alfred North Whitehead; namely, a present process with a past and a future. In the current era of the new technological revolution, which was high lighted by the successful and awe-inspiring launching of the first earth satellite in Veblen's centennial year, he remains both a challenge and an aid—a challenge to economists to move with the times and an aid to those who seek guidance in interpreting our swiftly changing twentieth-century economy. We are certain of only one thing—that neither the science of economics nor the economic system will stand still. It is inescapably true that growth is change. What will the economic changes of the future be, and in what direction will they move? If we agree that economic change is unremitting, what can be the alternative directions of this change except those suggested by Veblen and his followers? A glance around the world of today strongly suggests that Thorstein Veblen, as viewed in his centennial year, belongs in many important ways more to the future than to the past.

VEBLEN'S CRITIQUE OF THE AMERICAN ECONOMY

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In one sense, all theorists of economic development must accord pride of place to the technological factor. This is, after all, the core of the productive system, and all the great economic changes of which we have knowledge have been associated with technological progress or regress. But of course all theorists do not treat the technological factor in the same way.

As is well known, in the Marxian theory of capitalism the prime mover is the accumulation of capital—an activity which capitalists are literally forced to engage in as a means to advancement and on pain of economic death. Technological development is motivated and controlled by the imperatives of the accumulation process, and the inventors and technicians who do the creative work are basically agents of the capitalists. Schumpeter—the other theorist besides Marx with whom Veblen bears close comparison—has quite a different theory: in his view, capitalists are mere passive rentiers, while the active element is the entrepreneur working with borrowed funds, whose distinguishing characteristic is a genius for innovation in the realms of technology and economic organization. I cannot remember offhand that Schumpeter addressed himself specifically to the role of inventors and technicians, but there can be no doubt that he thought of them as being related to the entrepreneur much as Marx related them to the capitalist.

Veblen's view stands in contrast to both Marx's and Schumpeter's. Veblen's "absentee owners" are identical with Marx's capitalists, and when he speaks of "captains of industry" he is referring to pretty much the same group as Schumpeter's entrepreneurs. But that is about as far as the similarities go.

The crucial difference is that Veblen, unlike the others, makes the sharpest kind of separation between business and industry—the realm of pecuniary values on the one hand and of material production on the other. In his view—and there was never any wavering or doubt on the point—both absentee owners and captains of industry operate exclusively in the sphere of business; their relation to industry is at best permissive and at worst destructive. From this it follows that in relation to the development of the industrial arts, they play a negative rather than a positive role.

Nevertheless, in Veblen's theory, the industrial arts do develop—and

at an ever accelerating pace. Moreover, it is precisely this process which underlies the whole of modern history and sets the alternatives before the human race. As Veblen saw it, this process is a social one which takes place largely independently of the will or actions of the businessman and in this sense can be considered to be essentially exogenous to the capitalist economy. The industrial arts, in other words, are the motor of the system, but the motor is fueled from outside, and the only controls that are applied from the inside are brakes of uncertain strength and holding power.

The development of the industrial arts—and more specifically of what Veblen called the machine process—is, then, the key to modern economic history. And since this process takes place autonomously, it follows that the chief theoretical problem for Veblen is to analyze its impact on the economic process. His most comprehensive work on this subject is *The Theory of Business Enterprise* (1904), on which I have drawn for much of what follows.

The machine process gives rise to large-scale production; large-scale production brings in its train the corporate form of organization; and along with corporations come the securities markets, promoters, underwriters, and the rest of the financial accoutrements of modern big business. All this, in Veblen's view, marks a decisive change from the small-scale production and the individual owner-entrepreneur of classical economics. The center of attention of the larger type of businessman shifts progressively from the production of useful goods and services to the sale and manipulation of corporate securities which in turn represent essentially the capitalized earning power of the underlying firms.

It is in this context that the consequences of continuous, and indeed accelerating, technological advance must be assessed. As Veblen saw it, the primary effect was a continuous lowering of production costs. With new machines able to produce more cheaply than old, the result could only be a steady undermining of existing capitalizations. And this, according to Veblen, must exercise an unremitting depressive effect on business in general. "It may, therefore, be said, on the basis of this view," he concluded, "that chronic depression, more or less pronounced, is normal to business under the fully developed regime of modern industry."

Veblen went much farther than asserting the existence of a mere tendency to chronic depression. Writing in 1904, he thought he could say with assurance that the tendency had come to prevail in practice and that such relief from economic stagnation as had been experienced in the recent past was due to exogenous causes rather than to inherent recuperative powers of the system. This idea, of course, became fa-

miliar enough during the thirties, but in all the debate over the stagnation theory which has taken place during the last two decades I do not recall having seen any references to Veblen, let alone recognition of his pioneer role in this branch of economic theory.

Veblen did not leave the matter there. The state of affairs depicted, he said, "calls for a remedy," and the "remedy may be sought in one or the other of two directions: (1) in an increased unproductive consumption of goods; or (2) in an elimination of that 'cutthroat' competition that keeps profits below the 'reasonable' level." This, it will be seen, invites an analysis of two further basic aspects of economic development; namely, the changing pattern of private and public consumption and the growth of monopolistic forms of organization and behavior.

Actually, Veblen never undertook a systematic inquiry into either of these subjects, in *The Theory of Business Enterprise* or elsewhere, though a large part of what he wrote bears directly or indirectly on one or both of them. His general view in 1904 was that while something could be, and in fact was being, accomplished through an expansion of unproductive consumption, especially by governments, it was not enough: "So long as industry remains at its present level of efficiency, and especially so long as incomes continue to be distributed somewhat after the present scheme, waste cannot be expected to overtake production, and can therefore not check the untoward tendency to depression." From this, Veblen drew the conclusion that the pressure to form ever larger and more comprehensive combinations was therefore irresistible and could be expected to continue until industry shall have been put "on the basis of so comprehensive and rigorous a coalition of business concerns as shall wholly exclude competition, even in the face of any conceivable amount of new capital seeking investment."

It is not altogether clear what effect Veblen expected this trend to monopoly to have on the tendency to chronic depression. He did not pursue the matter to a conclusion in *The Theory of Business Enterprise;* and what he had to say in *Absentee Ownership,* his most important later work on capitalism, does not lend itself to unambiguous interpretation. Nevertheless I think I am right in saying that he thought the curtailment of competition would bring a measure of business prosperity along with a persistent underutilization of industrial resources. In keeping with this view, he seems to have expected that the later twenties would be characterized by a relatively stable economic situation comprising "reasonable" profits on the one hand and much unemployment and excess capacity on the other. Under these circumstances, the center of conflict, and hence of change, in the American economy would shift increasingly to the field of labor relations.

Here we may discern a basic similarity in the theories of Veblen and Marx: in the final analysis, both believed that the fate of capitalism would depend on the course and outcome of a class struggle between capital and labor.

In his earlier writings, Veblen treated the class struggle as being basically motivated and conditioned by differing occupational disciplines. Industry makes radicals of workers, and finance makes conservatives of businessmen. Organizationally, "trade unionism is . . . to be taken as a somewhat mitigated expression of what the mechanical standardization of industry inculcates," and as of 1904 there was no doubt in Veblen's mind that "the classes who move in trade unions are, however crudely and blindly, endeavoring under the compulsion of the machine process, to construct an institutional scheme on the lines imposed by the new exigencies given by the machine process." Read in context, this can only be interpreted to mean that the working class was turning to socialism, which is pretty much what the Marxists were saying, too. But this similarity in the conclusions of the two theories should not lead us to overlook their differences: Veblen's, as it appeared in *The Theory of Business Enterprise,* was one of occupational conditioning, Marx's of class interest.

A second strand in Veblen's thinking on the class struggle was closer to Marx, and as the years went by it came increasingly to the fore until, by the time of *Absentee Ownership*, it had for all practical purposes taken exclusive possession of the field. In this last book by Veblen one can find no more than traces of the old occupational-discipline theory, while a class-interest theory is repeatedly set forth in the most uncompromising terms.

It might be thought that the ultimate logical outcome of Veblen's theory would be a prediction, as confident as Marx's, that capitalism must necessarily be replaced by socialism. After all, the machine process was extending its sway, and its ulterior effects seemed all to point in the direction of a socialist consummation. If Veblen did not follow through to this conclusion, the reason is the theory sketched above was, from his point of view, only one side of the story. There was also the question of what the conservative classes could and would do to defend their interests, and only after this had been taken into account would a balanced assessment of future prospects be possible. To understand Veblen's views in this connection, we must first take a brief look at his theory of the state and of the relation between the economic and political aspects of capitalist society.

The Veblenian theory of the state under capitalism may be said to have two basic aspects: (1) On the one hand, Veblen takes it for granted that the state is the guarantor of the existing social order and

that this means that its first and overriding duty is to safeguard property rights. It means further, and again as a matter of course, that the government is in the hands of the propertied classes and will be freely used by them to protect and promote their own interests. (2) Democracy of the Western European variety not only does not contradict this scheme of things but fits into it as an integral, and even indispensable, working part.

It is important to note that in putting forward this theory, Veblen did not state or imply that democracy is a fraud in the sense that it excludes the underlying population from the governing process. His point is that the underlying population has been successfully conditioned to want only business leadership; while the latter, for its part, would not be able to govern without "the advice and consent of the common run." The question immediately arises, therefore, as to what would happen if and when the common run, spurred by its material interests and disciplined by the machine process, should stop wanting business leadership and should refuse its further consent. The whole logic of Veblen's theory points to precisely such a denouement.

Veblen, however, made no direct attempt to answer this question—though of course any complete theory of the state would have to do so—but instead concentrated on what the vested interests could do to prevent matters from reaching this pass. And it is here that his theory of "national integrity" (one of a number of expressions used to convey the same idea) enters into the picture.

To Veblen, the sense of national integrity, or plain nationalism, to use a shorter term, is one of the oldest and most deep-rooted of all human sentiments, being a direct lineal descendant of the solidarity of the savage tribe in the face of its enemies. Originally, and for literally millennia thereafter, this sentiment served the purpose of group survival, as it still does in the case of countries struggling for their independence, and this explains how it happened to acquire something of the force and obduracy of an inherent trait of human nature. In the case of modern capitalist countries, to be sure, nationalism has not only ceased to serve a useful purpose but has become a thoroughly harmful and disruptive force. As yet, however, there have been few if any signs of an abatement in the intensity of nationalist feeling, and in most of his writings Veblen seems to imply that it would be utopian to expect any such development within a time period which it is worth while to try to take account of.

Nationalism fits into Veblen's over-all theory as the instrument used by the vested interests to control the underlying population. The way this control works is twofold. (1) On the one hand, the interests of the owners are (successfully) identified with the interests of the nation.

This enables the state to secure popular support for a program devoted in the main to the furtherance of class interests. (2) More important in a dynamic sense, the vested interests are able, by adopting aggressive policies toward the outside world, to set in motion a disciplinary process comparable in strength and opposite in direction to that of the machine industry. This process is the militarization of society which not only affects the economy but also shapes the lives and thoughts of the people in a variety of direct and indirect ways.

We are now in a position to assemble the various pieces of Veblen's theory into a coherent whole. We have seen that the machine process is the motor force of capitalist development, and that its advance is cumulative and independent of the will or actions of the businessmen. The machine process brings in its wake institutional changes which lead at first to a state of chronic depression; then to a monopolized economy in which profits are protected but human and material resources are persistently underutilized. This condition of affairs in turn intensifies a class struggle which is already implicit in the occupational division of society between industry and business. The logic of the struggle points to a progressive undermining of the eighteenth-century principles on which business enterprise rests, and ultimately to a socialist reconstruction of society. To this trend, however, the vested interests oppose a counterforce in the shape of aggressive national policies which, harnessing the people's fierce sense of nationalism, create the illusion of a solidarity of national interests and impose on society the retrogressive discipline of the barracks and the police state. Veblen did not pretend to be able to say which trend would get the upper hand, but he was sure that in either case capitalism could not survive. The machine process pointed forward to socialism, national politics backward to barbarism: neither would be compatible with business principles. It is on this note that *The Theory of Business Enterprise* closes.

Twenty years later, at the end of his productive career, Veblen returned to the same gnawing question. If I have interpreted him aright, he had not really changed his mind on any essential point of principle. But whatever hope he had once entertained for the "civilized" countries—there is no doubt that he had the United States chiefly in mind—had pretty well disappeared. The total mood was now one of black despair: "In the long run, of course, the pressure of changing material circumstances will have to shape the lines of human conduct, on pain of extinction. . . . But it does not follow that the pressure of material necessity, visibly enforced by the death penalty, will ensure such a change in the legal and moral punctilios as will save the nation from the death penalty." This passage occurs near the beginning of

Absentee Ownership. It is nowhere countermanded in the 400-odd pages that follow, and it finds both sanction and emphasis in the gloomy ruminations that bring the book to its conclusion. It can safely be taken as Veblen's last word on the outlook for American captialism.

With the knowledge of hindsight, it is of course easy to see that Veblen's theory was too narrow and confining to contain the tumultuous developments of the succeeding decades. The boom and bust of the twenties, the long depression of the thirties, and above all the unprecedented and almost uninterrupted expansion after World War II—none of these fit into the Veblenian framework as it finally took shape in *Absentee Ownership*. And yet it seems obvious that we cannot on that account dismiss Veblen's theory as of no more than historical interest. On the contrary, anyone reading his major works on capitalism today must, I think, be struck by the fact that the vision which they embody remains astonishingly fresh and relevant. No one understood so clearly the growth of monopolistic (or, if you prefer, oligopolistic) big business with its ramifications and implications in such fields as advertising, distribution, and popular culture. No one grasped so thoroughly the unity of economics and politics. Above all, Veblen was and remains unique in the way he assigns a decisive role in the development of capitalism to the reciprocating interaction of business principles and national politics. Others have described the economic impact of war, the psychological effects of militarism, the cultural incidences of nationalism; and none can deny that these forces have become increasingly important, if not actually dominant, in the world of today. Yet only Veblen has built these elements into a reasoned and coherent theory. Finally, I imagine that I am not alone in thinking that Veblen's pessimism may be a good deal more meaningful and relevant than it is now fashionable to admit.

If all these things are true, as I believe they are, then the question may well be asked why so much that has happened in the last thirty years escapes the net of Veblen's theory. The answer lies, I believe, in certain serious, but remediable, weaknesses in his analytic apparatus. In closing, I should like to indicate, in desperate brevity, the nature of these weaknesses.

The root of the trouble was that Veblen, like most of his contemporaries, never gave any serious thought to working out a usable income-expenditure theory. He habitually and naïvely assumed the operation of Say's Law in the extreme form in which total income is automatically spent and remains constant over time. And he equally habitually wrote about phenomena—depression, inflation, deflation, and the like—which could not possibly happen if the assumption were valid. Much that he said about these matters was all right as far as

it went, but this was invariably in spite of his analytic apparatus rather than because of it; and not unnaturally, this apparatus time and again came to the fore, now to hide a problem, a few pages later to block off a promising line of inquiry, sometimes to throw a whole line of argument into hopeless confusion. The result, of course, was that a number of very important questions were badly posed, wrongly answered, or allowed to drop just when they should have been most vigorously pursued.

Veblen's theory of chronic depression, which as we have seen played an important role in *The Theory of Business Enterprise,* is the most significant case in point. The causative factor, it will be recalled, is the progressive lowering of costs, and hence undermining of capital values, through technological advance. Veblen does not spell out the *modus operandi,* but the omission can easily be made good. Declining prices, bankruptcies, etc., can exercise a dampening effect on new investment; and a low level of investment can, in turn, keep income and employment at depression levels. Moreover, Veblen's analysis seems on the whole to presuppose some such mechanism. The remedies for depression which he discusses are (1) an expansion of consumption, particularly public consumption of an unproductive character, which obviously operates directly on the level of effective demand; and (2) the replacement of competition by monopoly, which may be assumed, at least initially, to have the effect of restoring the inducement to invest.

But as we read along in Chapter VII of *The Theory of Busines Enterprise,* where these matters are dealt with, we make the rather surprising discovery that Veblen's interest is centered almost entirely on the growth of monopoly and that the theory of chronic depression is hardly more than a link in a longer chain designed to prove that "the tendency to consolidation is irresistible." Having demonstrated this to his own satisfaction, Veblen went a step farther, apparently taking it for granted that the phenomenon of chronic depression would disappear along with free competition. In any case, the problem drops out of sight before the end of the chapter and never turns up again in any of his later works.

It is hard to believe that this would have happened if Veblen had ever seriously thought in terms of the determinants of consumption and investment. For in that case, he could hardly have believed that monopoly would have permanently solved the problem of the inducement to invest, and it seems rather more likely that he would have come to precisely the opposite conclusion. And if chronic depression had remained in his mind, even only as a tendency, all of his subsequent theorizing about the stability and fate of capitalism might have been profoundly affected. The decade of the thirties would certainly have

fitted nicely into such a broadened Veblenian framework. Further, Veblen might have—I should think almost certainly would have—been led to take up again and extend the theory of unproductive public consumption as a remedy for depression. This would have provided him with an additional link between economics and politics, between the needs of business and the results of a warlike national policy. And it would have left the door open for the elaboration of a distinctively Veblenian theory of the forties and fifties.

DISCUSSION

PETER N. VUKASIN: What is immediately striking about Veblen from the conventional point of view is the scope of the subject matter. It runs the gamut from broad generalizations about cultural incidence to the technicalities of business finance. This may appear, in our age of academic compartmentalization, as an intellectual prying into unrelated problems of separate social disciplines. We are indebted to Mr. Gruchy and Mr. Sweezy for interpretations of Veblenian thought which recognize that this apparent diversity represents in fact a singleness of purpose in pursuing a broad and important social issue. This issue can be formulated in most general and modern terms as the nature and consequences of and the prospects for economic development under capitalism. These papers also provide us with an appreciation or evaluation of Veblen in the form of suggested revisions. They differ with respect to emphasis in interpretation and in the scope and significance of the respective criticisms. My comments are directed to suggesting that these differences, to a large extent, hinge on that largely disavowed stepfather of economics: the theory of the state.

Mr. Gruchy's critique is focused on a comparison between Veblen and what he has called "mid-century institutionalism." (Mr. Gruchy has indicated subsequently that his paper was intended as a description not an advocacy of the position characterized as "mid-century institutionalism." While this, of course, does not affect the import of my comments, their reference is correspondingly altered.) Of the three categories of comparison employed, the one which encompasses the most distinctively Veblenian doctrine is the theory of capitalism; viz., the institutional structure and functioning of the system. While there is agreement on some rather general matters, it is held that crucial developments which Veblen envisioned under capitalism—the impact of the machine process on psychological attitudes, the resulting group differentiations in society, the nature of the increasingly collective action by major economic interests, and the role of government—have been oversimplified. These differences on critical points are not pursued beyond passing reference to a new alignment of economic power since Veblen's time, the evolution of a plurality of classes, and the fact that government now represents a number of diverse interest groups. Mr. Gruchy, rather, proceeds to a comparison of policy programs. He outlines a system of regulated or welfare capitalism with economic supervision by a national economic council, employing national economic budgets and guided by the criterion of balancing the various components of gross output in order to facilitate stable growth. While Veblen did conjecture along such lines, his major interest remains consistently focused on the theory of capitalist development. The difficulty, then, in comparing or appraising the two points of view is that, in the end, the central questions which are asked seem to be different.

Veblen's main effort was addressed to the question: What is the natural history of individual attitudes and organizational behavior, including that of government, in the regime of mature industrial capitalism? With respect to

prediction, this takes the form: How may these social developments give rise to further institutional adjustments? His answers and their import are well known. The divisive, antisocial, industry-sabotaging proclivities of business supported by its creature, the state, and of labor and other emergent economic combines contend with a potential rationality and organicity made possible by technological achievement. What is relevant here is that, to Veblen, the explanation of the whys and wherefores of this process was the matter of primary scientific interest; and the state was conceived as an institution whose role was subject to the same kind of interpretation, and perhaps considerable misinterpretation in Veblen's case, as that of any other.

It seems that Mr. Gruchy has attacked matters somewhat differently. As far as I can see, his main effort is directed towards the question: How can such obstacles to rational economic development as are clearly perceived to exist in the private sector be overcome? Veblen's extended treatment of these obstacles is made unnecessary by the implicit role assigned to the state. An excellent case is made to the effect that a "control tower" approach, oriented to achievement of short-run full employment of resources, does not guarantee an adequate rate of growth. This leads to a proposed program of public-private enterprise, with limited planning by the government and execution still largely in private hands. And, while this planning involves joint consultation and collaboration with business and labor, it is clear that the inspiration and sanctions for such a program are attributed to the government. However, in the main, this is treated as a matter of assumption, prescription, or anticipation—as a given. In the absence of an institutional treatment of the sources and uses of political power, the role of the state approaches that of a *deus ex machina,* largely devoid of ideology or commitment, with the capacity of capitalizing on such social harmonism and/or overriding such social conflict as has evolved, whichever the case may be. Given these assumptions, it follows that the essential question then would become: What constitutes desirable state action? And this, in turn, leads to emphasizing the formal problems of mutual adjustment and balance among abstract categories of aggregate output, consumption, investment, and government expenditure.

In Mr. Sweezy's interpretation, pride of place is accorded to Veblen's treatment of the role of political power in the career of capitalism. He does not suggest a major reassessment in this connection. Rather, he would supplement Veblen's general theory of capitalism with the income-expenditure analysis to better account for short-run fluctuation. The additional explanation pertains primarily to the *modus operandi* of the private sector. However, he also suggests that this analysis might have led Veblen to revive his theory of unproductive public consumption. In the face of a considerable orientation to productive expenditures and general welfare in the thirties, one might equally logically suggest a re-examination and some modification at least of Veblen's straightforward interpretation of the state as a "Soviet of Businessmen's Delegates."

In any case, the issue can be attacked more generally, for the present purpose of appreciating Veblen's doctrine, by recurring to the form in which it was couched. The view is that political power in the hands of absentee

owners is directed toward rehabilitating the "ancient virtues" of pathological nationalism and of militarism. Veblen's other comments on the subject likewise suggest that this is not a theory of the state under capitalism but of all statehood since its inception in the transition from communal savagery to barbarism. Intellectual speculation which is applicable to so much of human history, concerning such durable institutions as the state, family, group solidarity, undoubtedly produces fruitful insights. However, they are often only beginning insights for an inspection of the actual and potential operation of these institutions in specific historical contexts.

Without prejudice to or pretense of any final generalizations which may be appropriate as to the role of the state, it is worth noting that patriotism has indeed been a blessing as well as a curse—in the recent war, for example. It is worth noting that socialist countries of all types have employed this motivation; and above all the underdeveloped countries, again of all types, have found nationalism an irreplaceable mobilizer of desperately needed *esprit de corps* for a desperate task. Reverting to our own experience, it would be patently absurd to interpret the Civilian Conservation Corps as a purely militaristic expedient.

I have tried to suggest that in the study of structural economic change, whether it be called institutionalism or the theory of economic development, the state inevitably creeps in, if only by the back door, and that the difficulties of coping with it are formidable. In this connection, a passage from the late Professor Rogin's study of the history of economic thought is particularly relevant. In the course of a discussion on the influence of political assumptions on economic theorizing, he states:

> It seems to have been the fate of economic theory to be the by-product of the economic theorists' conception of the state. The neat and dogmatic theoretical projection of the first self-styled "*Économistes*," the physiocrats, was in part contingent on their belated Renaissance conception of the philosopher-king. . . . Adam Smith's doctrine of laissez faire was based . . . on the presumption that the state was in essence a vessel of corruption, incompetence, and economic waste. This conception he bequeathed as a legacy to liberal economics . . . Karl Marx's theory . . . operates with the presumption that the state under capitalism is of necessity the "executive committee of the capitalist class" . . . [a presumption] based partly on inadequate prescience as to the implications of political democracy, the future scope of state intervention under capitalism, and the role of nationalism. . . . These presumptions as to the nature of the state constitute the implicit justification for the proliferation of "pure" economic theory in abstraction from the role of politics. (*The Meaning and Validity of Economic Theory*, pages 366-367.)

More particularly, I have suggested that Veblen's, and Mr. Gruchy's and Mr. Sweezy's versions of Veblen's theory of economic development are, to a considerable extent, conditioned by their respective treatments of the role of the state.

It would seem to follow that explicit formulation and refinement of political premises in broad economic theorizing is essential, not as a matter of interdisciplinary fetish, but as an indispensable aspect of intelligent reasoning. The most probable result of not doing so is that the tail of implicit and undeveloped political assumptions will wag the dog of "pure" economic theory.

George W. Zinke: The classical tradition, concerned with human progress, may yet survive to aid in mankind's survival. It is a tradition of contributing

to cultural unfoldment, in its economic bearing. Gruchy is arguing for cultural unfoldment when he advocates scientifically informed consultative action of government and management and labor. Sweezy shows how economics can be reconstituted as political economy by a refined appreciation of economic influences on political behavior.

Methodologically, the classical tradition views economics as an investigation into the conditions of congruence of economic institutions in the service of individual human improvement. Gruchy's study emphasizes the need for institutional congruence under modern conditions of corporations and farm blocs and labor unions—each playing by separate rules of administrative price and wage setting. Under these conditions, the ever epiphenomenal GNP is often to be found detracting. On a simple price-deflated quantitative output criterion, the mercantilists could have argued a strong case against Adam Smith from 1750 to the early 1790's—as indeed the neomercantilists have made a strong case, in false terms of mere GNP increases, from 1945 to the present.

The classical growth criterion is that of surplus industrial production over capital requirements and conventional labor subsistence. Net surplus product is not represented as a simple consumer goods balancing item of national output. Instead, net surplus production is a key factor in the critical ratio of consumption to investment. Net surplus product not only sustains economic growth but gives it direction. Adam Smith argued for an increase of agricultural capital investment to aid in the production of more staple agricultural wage-goods—the first need of the masses, as he saw it. Today, industrial surplus production should increasingly sustain the consumption of and investment in health and housing and educational facilities.

Gruchy cleverly shows the increasing recognition, since Veblen's time, that wage-profit policies and consumption-investment balancing, to sustain economic growth, depend upon the institutional congruences. Gruchy presents a forthright delineation of the needs and advocated procedures of purposeful and mutualistic national budgeting. Four institutional requirements are stated for realizing and utilizing a growth-promoting economic surplus. Government is assigned the role which modern public opinion expects it to play; administrative procedures are discussed; national budgets are to be cast in terms of constructive priority ratings. Above all, public and private parties who are expected to live with the results of budgeting are to participate in the national budget's formulation. The parties are not to be cajoled or exhorted or "control-towered" into conformance with dimly understood macroeconomic trends to normalization or schemes of stabilization. Instead, information through participation is made the *quid pro quo* of economic responsibilities demanded—of private and public enterprise, as well as of farmers' associations and labor unions. This participational interpretation of control would seem to generalize the National Planning Association's observations on the conduct of peaceful and progressive labor relations.

The sum and substance of Gruchy's remarkably thorough reasoning furnishes the keynotes on which any modern treatise on elementary economics must be written—if it is to teach "first things first." Many important concepts such as collective want satisfaction come to their fruition in the context of

what Gruchy calls the intellectual approach of modern institutionalism. Others are free to call it merely a consensus of economists' opinions. By whatever name known, the approach illustrated by Gruchy is destined to benefit higher learning.

The case is not so clear as regards Gruchy's contribution to the art and science of higher criticism. To be sure, higher criticism cannot be the subject matter of introductory popular instruction, such as must be afforded and expected before a person can exercise his critical bent intelligently. Gruchy elegantly sets the stage for acts of higher criticism. However, there would appear to be no reason why he should have strayed into the bypath of polemics, to assert, for instance, that Veblen's interest in problems of economic growth under socialism is irrelevant, because socialism is not at the present time a practical issue in America. This may be the case, but domestic economic policies are profoundly influenced by issues of economic relations with countries organized on the basis of socialist production. As Sweezy shows, Veblen's most soul-searching remarks were inspired by anticipation of our contemporary fears and hopes in this connection. A course in comparative economic systems, imaginatively oriented to a search for the causes of peace under international bargaining, is certainly in order at the intermediate level of theoretical analysis.

Sweezy's study has the virtue of furnishing much grist for the mill of advanced thought about the reciprocal impacts of different economic systems. His contribution is also classical, for men of the stature of Smith and Ricardo and Marx and Veblen were at one in seeking the conditions of international peace, in its economic bearings. Sweezy brings to the fore many refined questions that must be asked now that the only international equilibrium easily in sight is that of mutual extinction, as Veblen so precociously foresaw in 1923.

It is encouraging to find that Sweezy agrees with Gruchy on the practical significance of income-expenditure theory and data not available to Veblen. Let us suppose that this apparatus is applied to practical problem-solving in the manner and in the classical spirit advocated by Gruchy and Sweezy. Then it might be possible to reconcile political democracy and planned economy in the sense hoped for by the late Leo Rogin when he pointed out that a planned economy does not necessarily call for a collectivist economy. The methods of rationalizing an economy will and should be different in different countries. But economic rationalization does mean the subordination of fiscal policy and public and private enterprise to a national over-all plan integrated with world economy.

This desirable eventuation, Rogin warned, can be achieved only in a world effectively organized for the prevention of war. And in such a world it is that the need arises for a further development of Veblen; that is, the classical traditions of art and science of higher cultural criticism. Such criticism proceeds from the viewpoint of the quality of cultural living—what society does for and to the individual. In this regard, Gruchy and Sweezy have given Veblen short shrift. And because of its relative lack of bearing on individual human quality, modern institutionalism is actually heretical—both in reference to the classical tradition and in re Veblen.

DEMOCRACY AND TRADE UNIONISM

SOME REQUIREMENTS FOR UNION DEMOCRACY

By JOEL SEIDMAN
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What concept of democracy is appropriate in a trade-union context? If it means the determination of policy directly by a rank-and-file majority, democracy is to be found only in small local unions; various types of authority must be entrusted to officers in large organizations and it is rare for the majority to participate actively, except during crises or when the organization is new. If the test of democracy is the power of the rank and file to control vital decisions either directly or else through the election of officers, then most local unions in this country are democratic and most national unions are not, for reasons that will be discussed later. If, however, the definition of democracy is responsiveness by the leaders to the presumed desires of the membership, then most unions are democratic, at the national as well as the local level. If membership approval of leader performance is the test of democracy, the United Mine Workers are democratic, although the key officers of two-thirds of the districts have long been appointed by Lewis and are subject to removal at his will.

At the other extreme is the International Typographical Union, which has had a well-developed two-party system for the past half century. Here the internal political system resembles that to which we are accustomed in our national political life: permanent parties, regular contests, opportunity for the electorate to become acquainted with opposing platforms, and recognition on the part of all that opposition is legitimate.[1] If these are considered the conditions of union democracy, however, only one national union in this country is democratic.

Some hold that democracy in unions is secondary to considerations of efficiency or discipline. John L. Lewis, for example, has denied that the issue of district autonomy in the UMW involved a fundamental principle, asserting that the question was one of business expediency and administrative policy.[2] A somewhat related view, emphasizing fighting ability as exhibited in strikes as vital to collective bargaining

[1] For an able analysis of the two-party system within the ITU and the factors that made it possible, see Seymour Martin Lipset, Martin A. Trow, and James S. Coleman, *Union Democracy: The Internal Politics of the International Typographical Union* (Glencoe, Ill.: The Free Press, 1956).

[2] See, for example, *Proceedings of the Thirty-fourth Constitutional Convention of the United Mine Workers of America*, 1936, p. 122. See also the discussion in Bernard Karsh and Jack London, "The Coal Miners: A Study of Union Control," *Q.J.E.*, Aug., 1954, pp. 415–436.

success, places primary reliance on strong leadership and discipline. Here the psychology is much like that of a nation at war, fearful lest internal division give an advantage to the enemy. To those holding such views, union democracy, which emphasizes the issues upon which union members disagree, is a weakening influence. It is thirty years since A. J. Muste called attention to the dual nature of the trade-union, which tried to combine the social structure of the town meeting with that of the army.[3] Which is the more important objective: democracy with its recognition of internal differences or discipline at the price of enforced internal unity?

It is even asserted that considerations of democracy are irrelevant in an appraisal of the labor movement. To the British writer V. L. Allen, for example, a union is a service organization created to perform collective bargaining and related functions; not interested in self-government, workers cast their effective votes by joining a union and paying dues or by dropping their membership, thereby putting an unsatisfactory union out of business. Yet Allen points out that this view is possible only where freedom of movement in or out of a union exists; therefore it is not applicable where union security clauses, as in this country, are in widespread use.[4]

My own feeling is that national unions have tended to err on the side of discipline, sacrificing far more in the way of democracy than is desirable. It must be granted, however, that some discipline is necessary to permit effective functioning; that unrestrained democracy borders on anarchy, just as excessive discipline results in dictatorship; and that there is a border area where the values of discipline, efficiency of administration, or collective bargaining effectiveness appear to conflict with democracy. I would suspect, however, that the conflict is more often apparent than real, in that a democratic organization has resources of membership loyalty vital to its survival. Yet in some cases it may be true that factionalism has weakened union bargaining effectiveness; where this happens it is part of the price paid for democracy.

Granted that authority must be vested in leaders if contracts are to be negotiated and union affairs administered, democracy is achieved if the members can make their will felt, if they can replace the leaders and change the policies that they dislike. Their ability to do this, however, is diminished by the low level of membership participation found in most local unions.[5]

[3] A. J. Muste, "Factional Fights in Trade Unions," in J. B. S. Hardman, editor, *American Labor Dynamics* (Harcourt, Brace, 1928), pp. 332-333.

[4] V. L. Allen, *Power in Trade Unions* (London: Longmans, Green, 1954), pp. 10-11, 15.

[5] Most studies have shown union meeting attendance at rather low levels. Sayles and Strauss, for example, found attendance usually ranging between 2 and 6 per cent in a

In all of this, the position of the union leader is an interesting one. He has a vested interest in preferring discipline to democracy, in order to ensure his own tenure of office. Yet his reputation as a labor leader in his own union, as elsewhere, depends largely upon his ability to match, if not exceed, the collective bargaining gains obtained by rival unions. If he fails in this, his own members will become dissatisfied and likely to support an opposition candidate or become an easy prey to rival unions, while his organizers can expect little success in enrolling new members. His own interests, therefore, drive him in the direction of wage and related gains for his members—most of whom are likely to care far more for such advances than for the exercise of abstract democratic rights.

It should be noted that union posts vary enormously in their appeal, with their material benefits as well as psychological rewards increasing as one mounts the scale. At the local level, the unpaid posts of steward may be difficult to fill, because of the unrewarding nature of the steward's duties, combined with the lack of compensation. At the level of the local-wide officers, headed by the president, the prestige and power that go with the office make the posts attractive, even where no money or only a nominal sum is involved. Such unpaid jobs, however, tend to turn over frequently even where there is widespread satisfaction with the incumbent. Its duties crowd into his spare time, disrupt his family life, and after a time he usually prefers to leave both the prestige and the headaches of the office to someone else.

The situation of the full-time, paid local union officer is entirely different. He does not superimpose additional duties on a working day in the plant or at the trade. Instead, he leads an entirely different style of life; he dresses in a business suit, works at a desk like any other executive, and enjoys a larger income than he could earn in the shop. It rarely, if ever, happens that one gives up all these advantages voluntarily to return to the trade. These rewards, both in economic and psychological terms, are enormously increased as one moves up to the important jobs at the national union level. Measured by any test—salary, economic power, political influence, or publicity—the heads of the important national unions are part of the power elite of the nation. Only men with great personal drive are likely to win their way to such posts, and only rarely does one relinquish his office voluntarily. The question, rather, is why so few aspirants contest for such

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group of industrial locals of medium size. Leonard R. Sayles and George Strauss, *The Local Union: Its Place in the Industrial Plant* (Harper, 1953), p. 173. A recent estimate places typical branch (local union) attendance in Britain between 3 and 15 per cent, with a heavy concentration between 4 and 7. B. C. Roberts, *Trade Union Government and Administration in Great Britain* (Harvard University Press, 1956), p. 95.

desirable posts, why the heads of important unions tend to be re-elected for successive terms without opposition.[6]

The political advantages of the holder of union office may be divided into three groups: (1) control over channels of communication, (2) opportunity to build a political machine, and (3) elements of power over the rank and file. In a small local union the incumbent has little advantage in terms of communication. The larger the local, however, the greater advantage he enjoys over any challenger. Particularly is this true where members work on scattered jobs, as in building or many service industries. Here the business agent is known to all on the jobs he services and forms the communications link between the member and the organization.

In the national union, however, these advantages are vastly increased. The publicity that an important national head receives in the daily press, the union journal that functions as a press organ for him, the flow of communications in his name to all the local unions, the spotlight that plays on him at the national convention, the expense account that permits him to visit locals throughout the country—all these are political advantages of the first order, impossible of matching by a rival candidate. Best of all, these activities, so vital to a re-election campaign, are carried on throughout his term of office and at the union's expense.

An opposition candidate, in contrast, needs large sums of money just to bring his name and program to the attention of the membership. It is a rare union, such as the International Typographical Union, that allots him space in its paper for this purpose. One would never have known, by reading the pre-election issue of *Steel Labor*, that Donald C. Rarick was opposing David J. McDonald for the presidency of the United Steelworkers in the February, 1957, election. In many unions, moreover, constitutional provisions hamper an opposition campaign. The constitution of the United Mine Workers punishes the circulation or the reading of a statement that wrongfully condemns the decision of an officer and outlaws the contribution of funds to promote candidacy for office. In other unions, such as the Railroad Trainmen, the permission of the international president is required before a circular may be sent generally throughout the union. At the extreme, an opposition caucus may be outlawed as a dual union.

Supplementing his control over communication is the power of the union head to build a political machine. The head of a small local union has few favors at his disposal, other than his support to a candi-

[6] See Chap. 2, "Opposition in Union Elections," in Philip Taft, *The Structure and Government of Labor Unions* (Harvard University Press, 1954), pp. 35-64.

date for lesser office or committee or other appointments that confer limited prestige. If the local is large enough to support several paid officers, these become political plums worth striving for. The question there is whether the head of the organization has enough influence with the membership to carry to election those whom he puts upon his slate. It is highly unlikely that an independent candidate will outvote any of the business agents and other officers who run as a slate for re-election; and the ambitious member is more likely to bide his time, support the incumbent group, and hope for a place on the slate when a vacancy occurs.

The head of a large national union, of course, typically has dozens of desirable positions, most of them appointive, around which a political machine can be built. Posts of organizer or international union representative, usually at the disposal of the union president or under his effective control, can be used to reward supporters or to placate ambitious men heading large locals who might otherwise seek high elective office. If the international vice-presidents or general executive board members are elected by majority vote of the convention rather than by a caucus of delegates from the area each serves, then the head of the union who enjoys the support of most of the delegates may control the entire election, insuring the success of each candidate given a place on his slate. Ambitious men therefore tend to wait their turn for administration support, meanwhile showing their faithfulness and value to the head and building up popular support in their own right so that they will bring strength to the administration slate.

Executive board members may be dependent upon the officers in other ways. In the United Mine Workers, as earlier observed, a majority of the board members are appointed by Lewis and hold office at his pleasure. In the Amalgamated Meat Cutters and Butcher Workmen, executive board members, by virtue of their election to that office, do not draw salaries from the national union office. They may, however, be assigned to duties for the International by the executive officers, who then fix their compensation. Between conventions the general executive board, in theory, serves as a check upon the power of the officers. Obviously its members cannot serve this function if they are dependent upon the leading officer for their jobs or their salaries.

The more desirable the union post, the more effective it is as a reward for political support and, by the same token, the more its threatened loss is an effective punishment. Here the crucial factor is the desirability of the union post in financial as well as psychological terms, as compared with working at the trade. In professional and some white-collar occupations, where work is interesting, fairly well paid, and of prestige value in the community, the union job is of no

great value and its loss is relatively unimportant. In the skilled trades, except for the printers, the difference both in terms of pay and prestige is greater, and consequently the union job is the foundation of the political machine. In less skilled work it is even more effective; it is very rare for the factory worker who loses his union post to return to his old occupation. The result is not only that the political machine is built and kept intact but that the former official is not back in the plant and in the union to provide experienced leadership to an opposition group.

In addition to all these advantages, the union head often possesses power over rank-and-file members that may be used to crush dissent. Every union needs to establish and enforce appropriate rules of behavior for members; employers, indeed, would insist upon this before entering into collective bargaining relations. The most careful students of the problem have shown that this power is not generally abused;[7] they have also shown, however, that the machinery is faulty, precisely at the point where the political process within the union is involved.

The chief weaknesses of the judicial process from this point of view are four in number: (1) members may be subject to charges based on vague provisions in the union constitution, such as "disturbing the harmony of meetings," "conduct unbecoming a member," "creating dissension," "improper conduct," or "insubordination or just and sufficient cause"; (2) the union executive and judicial machinery typically are merged, so that officers sit in judgment on or review cases in which their factional opponents are defendents; (3) the right of appeal to a disinterested body of judges is available only in several unions, such as the Upholsterers' International Union and the United Automobile Workers, both of which have established review boards of leading citizens; and (4) many unions permit too easy revocation of the charters of locals, without any requirement for the re-establishment of autonomous rights within a specified period of time.

A recent study of the Teamsters showed 12 per cent of the locals—105 out of 897—under trusteeship at the end of 1955.[8] At one time all of the locals of the Operating Engineers in Ohio and Texas and most of the important locals throughout the rest of the country were under the supervision of national office appointees. In some cases local unions have remained in receivership for as long as ten or fifteen years,[9] and the Illinois district of the United Mine Workers has yet to regain the autonomy which it lost in 1933.

[7] Clyde Summers, "Disciplinary Powers of Unions," *Ind. and Labor Rela. Rev.*, July, 1950, pp. 483-513, and "Disciplinary Procedures of Unions," *Ind. and Labor Rela. Rev.*, Oct., 1950, pp. 15-32; Chap. 4, "Discipline and Appeals in Labor Unions," in Taft, *op. cit.*, pp. 117-180.

[8] Paul Jacobs, "The World of Jimmy Hoffa," *The Reporter*, Jan. 24, 1957, pp. 13, 17.

[9] Horace B. Davis, "Receivership in American Unions," *Q.J.E.*, May, 1953, pp. 231-252.

One problem is that many unions grant far too much power to their national officers. The president of the Teamsters, for example, appoints International organizers and the chairmen of the four powerful regional conferences; he approves the bylaws of local unions and joint councils; he approves or disapproves of strikes by subordinate units; he interprets the constitution and laws of the International and decides all questions of law under them; he removes local officers where warranted and appoints trustees without time limit for the trusteeship. The head of the International Brotherhood of Electrical Workers enjoys a similarly broad grant of authority, as do some other union heads. The president of the American Federation of Musicians has the remarkable power to set aside provisions of the union's constitution and bylaws, except those dealing with finances, and substitute others of his own making when in his judgment this is necessary to protect the interests of the union. Philip Taft found that 51 international unions out of 115 that he studied granted extensive power to the chief executive.[10] British unions make no comparable grants of authority to their heads; and the former CIO unions, along with many of the old AFL unions, have built effective unions without any such concentrations of authority in the hands of officers.

If union officers abuse their authority, why do union members submit? The answer is, I think, twofold: (1) the great majority, concerned with economic benefits rather than with internal union political life, tend to support an administration that produces wage gains and other benefits; and (2) the sanctions that can be imposed upon recalcitrants are very effective. Expulsion from a union where a union shop clause exists resulted in the loss of one's job until the Taft-Hartley Act effected a modification. In industries such as the building trades where jobs are typically of short duration and where, to all practical purposes, the closed shop still operates, loss of union membership means banishment from the unionized portion of the industry. Where jobs are filled under a hiring hall or other employment system under union control, political opponents may be discriminated against without depriving them of union membership. Even where a threat to one's job is not involved, loss of union membership may cost a worker a pension, insurance, rights under a health or welfare plan, or other important benefits. As a result, workers submit, except where dissatisfaction is so widespread that they can replace the disliked union with another—provided that their jobs are not lost in the process.

There have been extreme cases, of course, in which the rights of the membership have been crushed and political dissent—or even the asking of questions—punished by violence. The inquiry in recent years

[10] Philip Taft, "The Constitutional Power of the Chief Officer in American Labor Unions," *Q.J.E.*, May, 1948, pp. 459, 464.

into the affairs of the International Longshoremen's Association disclosed that one local of that organization in New York City had gone thirty years without electing officers. Earlier the Tobacco Workers' International Union went without a convention from 1900 until a court order in 1939 forced the officers to call one.[11] While these cases are exceptional, they show that union democracy cannot be taken for granted and that the heads of national unions as well as the officers of locals may be the ones at fault.

Because of all the political advantages possessed by national union heads, the political life of the national union tends to develop at best into a one-party political structure and, at worst, into a personal dictatorship. Indeed, the argument has been advanced that the growth of bureaucracy at the expense of democracy is rooted in the nature of the union in particular and of organization in general.[12] A functioning democracy, as opposed to a single political machine or a benevolent dictatorship, is likely to emerge in a large organization only where the formation and activity of opposition political groups are considered legitimate. For such activity to be effective, in turn, nonadministration groups must be able to meet, raise funds, print literature, and reach the membership by circularizing the locals and by having space in the union publications. All of this will far from equal the political advantages of the administration; in their absence these advantages will prove insurmountable.

It seems clear, from this brief review of problems and practices, that the state of democracy within unions, particularly at the national level, leaves much to be desired. Besides making it possible for opposition groups to form and to function effectively, it is necessary to improve the disciplinary machinery of the union, particularly by providing for prompt review by an impartial body; and to reduce the power of union heads over the members and the locals, as by specifying the reasons for which receiverships may be imposed and limiting their length. Equally obvious are the needs to hold regular and frequent local meetings and national conventions, to protect the right of members to participate freely, to see that meetings are properly conducted, and that ballots are counted honestly. The right of applicants to be admitted to unions without discrimination because of religion, national origin, race, or other arbitrary grounds also needs protection.

It is not within the scope of this paper to discuss various remedies that have been proposed. I should like to note, however, that among

[11] For further instances of this sort, with other evidence of dishonesty or autocracy, see my *Union Rights and Union Duties* (Harcourt, Brace, 1943), Chap. 2.

[12] See, for example, Will Herberg, "Bureaucracy and Democracy in Labor Unions," *Antioch Rev.*, Fall, 1943, pp. 405-417.

the ethical practices codes developed by the AFL-CIO is one on union democratic processes. Observance of its provisions would prevent gross abuses of democracy, though without striking at many of the factors responsible for the erection of one-party political structures in so many unions. Yet the code represents very substantial progress, even though nonaffiliates of the AFL-CIO are not subject to it. Beyond this, three ways in which government might intervene could be listed: (1) it could establish further rights of action at law for aggrieved members; (2) it could give regulatory powers to an administrative agency such as the NLRB; (3) it could weaken the coercive power of unions over members by modifying union security provisions.

I have time only to point out that none of these approaches is without its problems. Legal remedies are too expensive and too long-delayed to afford much relief to the individual member, and the two other approaches may be seized upon by those interested in reducing the bargaining strength of unions. The type of action that I would support, by government as well as by the labor movement, would be designed to strengthen democratic procedures and controls without injuring collective bargaining effectiveness. Indeed, it is possible that strengthening of internal democracy, by improving morale, may increase membership loyalty and therefore bargaining strength.

THE USEFULNESS OF LAW IN ACHIEVING UNION DEMOCRACY

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The constitution of the AFL-CIO declares among the objects and principles of the Federation "to protect the labor movement from . . . all who are opposed to the basic principles of our democracy and free and democratic unionism" and "to safeguard the democratic character of the labor movement." This declaration of purpose has been reinforced by the Ethical Practices Code on Union Democratic Processes which states: "Freedom and democracy are the essential attributes of our movement. Labor organizations lacking these attributes . . . are unions in name only. Authoritarian control . . . is contrary to the spirit, the tradition and the principles which should always guide and govern our movement."

The Federation has thus declared its determination that unions shall be more than economic instruments narrowly devoted to material gains. It has rededicated itself to the historic mission of bringing democracy to American industry. It has reaffirmed its belief that unions can and must be democratic.

The purpose here is to inquire into the usefulness of the law in helping unions to attain that goal. To reach that problem we must leap over the difficult basic question whether the law has any proper part to play in the unions' internal problems. Bare conclusions must suffice here. The labor movement is a vital organ of our economic and political structure. Its healthfulness is essential for the health of our democracy. The law, as the compelling voice of society, can rightfully seek to help unions to cut out the cancers of corruption, block the virus of authoritarianism, and nourish the growth of internal democracy. The AFL-CIO needs the help of the law, for it has closely limited powers. It has been unable to discover oppressive practices within its midst; it cannot compel obedience by threatening expulsion; and it cannot reach those who stand outside. It casts out its refuse into the public street where government must control.

The role of the law is not limited to helping unions achieve their self-defined goals. Society has an independent interest in union democracy, for unions have been entrusted with the power to bind workers in their terms and conditions of employment through collective bargaining. A democratic society can rightfully require that such power be democratically exercised.

These conclusions do not negate the premises of pluralism or freedom, for they reinforce the principle that government intervention should be minimized. By protecting and fostering democratic processes within unions, the law can rely on the self-corrective ability of those processes. The necessity for intervention is reduced by insuring that unions speak with the voice of those whom they represent.

I

The first step in studying the usefulness of the law in achieving union democracy is to recognize that a living democracy requires two distinctive components. It requires the basic skeleton of minimum rights for union members, but it also requires the flesh and sinew of active self-government by union members. These two must be separately defined, for the problems of developing useful legal rules in the two may be quite different.

The minimum of union democracy includes four basic rights. First, every worker should have the right to participate in determining the policies of the union which represents him in collective bargaining. This includes the right to full and equal membership in the union, the right to speak freely at union meetings, the right to protest union policies, the right to criticize union officers vigorously, and the right to vote in free and honest elections. Second, every union member is entitled to due process of law. This includes the right to insist that the union follow its own established procedures and rules, the right to a full and fair hearing before an unbiased tribunal, and the right to a prompt appeal. Third, union democracy requires that union officers be accountable to the members for their conduct of the affairs and the handling of the monies of the union. Fourth, every union member is entitled to equal treatment by the union, including fair and equal representation in collective bargaining.

These basic democratic rights which enable union members to have a voice in their industrial government and which protect them from arbitrary or discriminatory action are but the bare prerequisites. Union democracy is achieved only when the members have, in fact, the ability to control the policies of their union. Freedom of protest is meaningless unless it is heard by other members; opposition to officers is pointless if they have a monopoly over channels of communications; and elections are but hollow forms where challengers lack finances or organization with which to campaign against an entrenched bureaucracy. Lipset, Trow, and Coleman in their pioneering work, *Union Democracy,* make clear that a functioning democracy is a product of institutions and practices within the union which enable dissent and opposition to be organizationally effective. The two-party

system of the ITU may not be applicable to other unions, but even within the framework of the one-party system certain measures might encourage and vitalize the democratic process by making the leadership more sensitive to protest.

The working requirements for a functioning democracy, particularly at the level of the international union, cannot be simply defined. For our purposes here, four elements are tentatively suggested as specially significant. First, democracy requires available channels of communication to make possible interchange of ideas, distribution of information, and organization of protest. Second, democracy must provide opportunities for the training of leaders who gain the skills and status to provide effective leadership to the opposition. Third, democracy is severely handicapped if there is a monolithic bureaucracy of officers and staff employees who hold their positions subject to the will of those in power. Protest from those best informed and able to lead is silenced, and any opposition is overwhelmed by the disciplined machine. Fourth, the three elements above suggest the critical value of local autonomy. The local newspaper may provide a counterbalance to the national publication; the local may have funds and facilities to make protests known throughout the union; it can provide independent leaders and an independent bureaucracy. This same value may be served by district, regional, or departmental structures to the extent that they are independent of central control.

This is but a bare outline of basic democratic rights and a suggestion of some working elements required to give those rights practical reality. The purpose is not to define those rights precisely, nor to analyze the working elements completely, but only to sketch the main features of the two areas in order that we may examine more critically the usefulness of the law in achieving union democracy in each area.

II

How effective can the law be in protecting the basic democratic rights of participation, due process, accountability, and equal protection? The law at present gives only halting protection to these rights. Legal relief comes erratically, giving too little too late and costing too much. This compels a closer scrutiny of these weaknesses to determine whether they are inherent or subject to correction.

The first and most critical weakness is that open recognition of these rights is blocked by threadbare legal doctrines which equate labor unions with sewing circles. Union members, it is mechanically repeated, have only those rights provided by the union constitution; and constitutional clauses which prohibit distribution of circulars,

organizing groups within the union, creating dissension or causing disruption are notoriously common. Few courts frankly repudiate oppressive use of these clauses, but use elastic contract logic to covertly protect individual rights. The veils of doctrine and legal logic conceal the results. Democracy draws little strength from such deviousness, for the myth that a union is a voluntary association like an Elks lodge is perpetuated in the minds of union members and leaders and even in the minds of unperceptive lawyers and judges.

The law need not be so obtuse. These basic democratic rights are capable of explicit recognition and statement as legal principles. They are the rights of a union member as a citizen in his industrial government and can be broadly stated as a bill of rights for union members. Like any bill of rights they are not self-defining absolutes but are qualified by the union's right to survive. Their application to specific fact situations is exceedingly difficult and the wavering boundary lines must be pricked out case by case. Simplicity and certainty cannot be achieved, but explicit declaration of these rights will clear away clouds of doubt and confusion. Problems can be faced squarely and legal remedies made more effective.

The second major weakness of the law is its delay. The main stumbling block is the well-thumbed rule that courts will not intervene until all appeals within the union are exhausted. This rule is solidly based, for unions should have first opportunity and responsibility to correct their mistakes. However, the protracted process of appealing through a hierarchy of officials, ending with the union convention, may take years. Dissenters will have been silenced, opposition groups disintegrated, corruptly elected officials entrenched in power, and union treasuries plundered. The judges, inwardly aware of the dangers of such delay, have created multiple exceptions which allow easy circumvention whenever necessary. However, constant repetition of the rule discourages the union member, misleads the lawyers, and frequently trips the hurried judge who does not see the paths of avoidance.

This barrier need not be so high nor so deceptive. Two changes in the law could enable it to fulfill its constructive purpose and reduce its destructive consequences. A simple statutory rule could require exhaustion of all appeals available within the union in a short period of time, perhaps six months. Unions thus could correct themselves and would be encouraged to provide prompt internal appeals. In addition, the law could in appropriate cases protect the rights of members by giving interim relief until those appeals were exhausted. Such measures would not only protect against the dangers of delay but would also reduce if not eliminate the need for debilitating exceptions.

Delay may take another form. Months or years may elapse between the filing of a suit and final judgment—a congenital defect of our legal procedures, aggravated by lawyers' unconscionable penchant for procrastination. This delay, however, does not preclude the law from giving prompt protection to democratic rights, for courts need not wait on final judgment. They can and customarily do issue temporary restraining orders giving immediate protection to threatened rights. If the courts clearly understand their function, they are fully equipped to act quickly and effectively in preserving democratic rights during the long postponements and appeals.

The third weakness of legal remedies is the high cost of litigation. A simple expulsion case may cost several thousand dollars in transcripts, printing charges, and lawyers' fees. It has been estimated that the fight against De Koning in Local 138 of the Operating Engineers has cost over $20,000 and the fight in Local 595 of the Iron Workers at Paducah cost the rebels an estimated $100,000. In the case of *Underwood* v. *Maloney* in the Philadelphia local of the Operating Engineers, the trial transcript was 4,000 pages and the printed record on appeal 1,200 pages. The very prospect of such financial burdens discourages members from asserting their rights, and lawyers are reluctant to take such cases knowing that they will receive little or no pay. Those in power, with the whole union treasury to draw on, can extend litigation and multiply legal costs until those who protest are financially crushed.

Two devices could be used to give some help. When individuals are forced to seek legal protection for democratic rights they might well be considered as protecting rights belonging to all members equally. If their claims are upheld, they should be entitled to full repayment of all legal costs incurred in protecting these rights. This is no more than minority stockholders or beneficiaries of trusts are now given when they assert rights held in common. The other method is to place enforcement of democratic rights in an administrative agency which then carries the burden of investigation and prosecution. This would give to the rights of union citizenship the same aid as has been given to the right to join unions for twenty years under the National Labor Relations Act.

None of these three weaknesses which now hobble the courts in protecting democratic rights is wholly incurable. Significant strengthening could be gained by relatively simple changes. The inquiry, however, cannot end here, for the goal is not legal victories or judicial proclamations but more effective democratic rights. These rights, particularly in the one-party system characteristic of unions, are

primarily instruments of protest. The ultimate test is whether the law helps or hinders dissenters in making effective protest against existing policies or established leaders.

This does not mean that the law should weigh the merits of contested union policies. On the contrary, its task is to preserve the process of protest as the method of resolving internal disputes. It must block both repressive crushing of opposition and disruptive splintering by dissidents in order that the political forces within the union can function freely. It fails in its purpose if, while giving formal relief, it renders protest futile.

Resort to legal protection by dissenters can be self-defeating. Traditional union hostility to the courts may be used to discredit them in the eyes of their fellow members. The debate may be shifted from the concrete issues of union policy to the abstract issue of judicial interference in union affairs, particularly when the legal issue is not whether the union has denied basic democratic rights but whether the union has technically violated its constitution. Seeking protection for the right to protest may thus seriously cripple the effectiveness of protest. However, this danger decreases as unions themselves increasingly look to the law to protect their rights and enforce their contracts.

The ability of the law to give effective protection to basic democratic rights depends largely on explicit legal recognition of those rights. The impact of the law is weakened when protection is by subterfuge of fictions and plastic theories. Its coercive thrust is deflected, for courts move quickly and resolutely only where goals are clearly stated; union members gain a sense of security only from positive guarantees; and union leaders are restrained only by direct prohibitions. More subtle than the coercive effect of the law is its moral force. In a democracy, law is obeyed, not merely out of fear, but out of willingness to be bound by rules made by free majorities. When the law incorporates ethical principles as a declaration of community values, it increases the sense of moral obligation to adhere to those values. This moral force is multiplied when the law adopts the ethical standards established by the group itself.

Explicit legal recognition of the basic rights set forth in the AFL-CIO code on democratic processes would add to the moral impact of those principles. It would help create a climate in which exercise of democratic rights was accepted as proper both by union members and union leaders. It would help establish the root concept of the legitimacy of opposition. Members asserting those rights would not be discredited, but leaders denying those rights would risk political reaction. The political forces within the union would thus be harnessed to protecting

instead of denying those rights. In the long run, this is perhaps the greatest contribution which the law can make in furthering union democracy.

III

Using the law to strengthen the working elements of active self-government which make union democracy a practicing reality poses much more difficult problems. These elements cannot be framed as legal commands, for they grow out of institutional structures and mechanisms within the union organization. The law cannot decree that the union create open channels of communications, provide leadership training, or eliminate its monolithic bureaucracy. These must be achieved, if at all, by indirection. Furthermore, these working elements are the sum total of an intricate network of devices and practices which may exist in an infinite variety of combinations.

The difficulty of the problem ought not deter us from searching for measures which may potentially contribute to more vigorous union democracy. The purpose here is not to prescribe solutions. At this threshold of inquiry we can only suggest the wide range of possibilities and examine present legal rules or proposals to determine their impact on union democracy. We proceed on the untested hypothesis that the law can play a more useful role if we focus on the problem.

Proposals for disclosure legislation emphasize public disclosure without any clear analysis of what functions this may serve. Overshadowed is the more significant value of enabling the union's own members to know what is being done within their union—the essential first step in a working democracy. To achieve this end, both the nature and form of the information may need to be quite different from that which suits the Department of Labor. Nor do financial statements exhaust the union members' need to know. Should the law guarantee them the right to inspect union records, have access to all collective contracts, or see the minutes of the executive board?

The channels of communication need to be open at both ends. Some small help might come from requiring the union to provide to members on request the names and addresses of all local unions and local officers. They might also be entitled to a mailing list of union members so that they might publicize information or ideas and canvass for support, the same as corporate shareholders.

Worker education programs may make a measurable contribution by giving union members better understanding of union organizaton, labor history, and industrial problems. Potential leaders may gain skills in grievance handling, contract negotiation, and parliamentary procedures. With such understanding and skills, democracy becomes more

viable. However, part of this value may be lost unless safeguards are established to prevent educational programs from becoming a transmission belt for the administration line and thereby fail to develop independence of thought and leadership.

The most stubborn problem is the oligarchic structure which provides those in power with a powerful political machine composed of subordinate officers, staff members, and field representatives, none of whom dares to question established policies or entrenched leadership. Unions have no civil service, nor are they protected by any Hatch Act. However, legal recognition of the right of union employees to organize might possibly serve the same end by providing political independence to these secondary leaders. Instead of dutifully echoing the official line, they might stimulate debate on critical issues, provide channels of communication, and give leadership to a more vital functioning democracy.

The law can potentially strengthen the focal point of union democracy by aiding and protecting local unions from total domination by the international union. The law cannot decree local autonomy, for centralized power, particularly in collective bargaining, is largely compelled by economic necessity. Centralism in unions reflects our trend toward interdependence and integration. However, modest steps are possible. Use of receivership to snuff out democratic processes at the local level could be curtailed, removal of elected officers of local unions could be closely scrutinized, raiding or forfeiture of local treasuries could be blocked, and censorship of local publications could be barred. Thus democracy which prevails at the local level could be guarded, and it in turn might nourish democracy at the international level.

Finally, study of the ITU suggests that union democracy works best when a union engages in multiple functions. Diverse activities provide leadership training, establish a webwork of contacts between members, and create a complex of conflicting views on a multitude of issues. Political contests and debate remain fluid instead of hardening around a single issue. If this is true, the law might encourage unions to broaden their activities rather than narrow them. This value might well be weighed in determining whether the law should frown on union political action.

These suggested possibilities admittedly bear marks of fancifulness and irresponsibility. Closer examination might reveal that they would contribute little or nothing to union democracy, or would cause harmful effects far outweighing their value. The law has goals equal or prior to union democracy, but for the purposes of this discussion these considerations have been cast aside. The narrow focus here is on those legal measures which might prove useful in reinforcing the work-

ing elements which make union democracy function. Awareness of the impact of seemingly irrelevant or remote rules may enable us better to judge their worth or tailor them to fill this need. It might also stir our imagination, opening new avenues to this end.

Conclusion

The primary responsibility for strengthening union democracy lies not on the law but on the labor movement. On union leaders rests the duty to develop the institutional mechanisms and practices which can give life and meaning to the forms of democracy. On union members rests the obligation to assert their rights of citizenship and exercise their instruments of self-government. The law ought not remove from the labor movement its responsibility to keep its own house in order but should only reinforce the efforts of those forces within which work to achieve these ideals.

The law could not, if it would, decree union democracy, for apathetic members cannot be compelled to action, nor can indifference be transformed to interest. The most that the law can do is to safeguard the basic rights essential for the life of union democracy and to contribute where possible to encouraging those institutions which give it vitality. Where democracy exists, its ability to survive can be protected and its growth can be nourished. Where democracy has ceased to exist, the law can create conditions favorable for its rebirth.

The law has fallen far short of this limited goal primarily because it has not explicitly recognized it as a goal. The courts have not consciously accepted any responsibility for union democracy nor overtly weighed this value in evolving legal rules. The legislators have added no clarity of purpose, but have further confused the problem by speaking vaguely of freeing workers from union control. We cannot know with any reliability the potential usefulness of the law in achieving union democracy, for we have not yet even begun to try. We have reason to hope that trying will not be in vain. Existing defects in protecting basic rights can be cured and countless new possibilities for fostering democratic processes remain to be explored.

SOME EFFORTS AT DEMOCRATIC UNION PARTICIPATION

By Ben D. Segal
International Union of Electrical Workers, AFL-CIO

Recent investigations and events have spotlighted the problem of racketeering, corruption, and the lack of democracy in some of our trade-unions. It is my contention, however, that the majority of our unions are clean and to a considerable extent run democratically. This is not to minimize the gravity of the problem. James B. Carey, president of the International Union of Electrical Workers, stated the problem picturesquely when he said in a speech:

> . . . The undeniable fact is that the House of Labor has termites and, therefore, needs a fumigation! There's no sense in trying to reassure ourselves with the fact that the number of termites is limited. We risk self-deception by repeating to ourselves that only a very small percentage of unions and workers are involved in racketeering. . . .
> . . . One single national union that is corrupt is one too many! One single local union that is run by racketeers is one too many! Corruption anywhere in trade unionism is morally indefensible. . . .

The action of the AFL-CIO Executive Council and its Ethical Practices Committee has been commendable in meeting the problem of corruption even at the probable risk of the loss of strength and income. By these actions and by the adoption of ethical practices codes the AFL-CIO has set for itself a higher moral standard than almost any other institutional group in our society.

This is as it should be. Workers developed unions specifically for just that purpose: to introduce more democracy into industry. Thus it is irrelevant, for example, to try to deflect the issue by pointing to corruption in management—as by making the apparently true statement that "where you have a corrupt labor leader you have a corrupt management."

The AFL-CIO resolution in Ethical Practices (December, 1955) recognizes the basic purpose—and need—by stating:

> The free and democratic labor movement of our country . . . rests upon the foundations of brotherhood, honesty and integrity.
> Any departure from the most exacting ethical principles is harmful not only to the people directly affected but to the whole fabric of our civilization.

If the trade-union movement lost its democratic ideals, it would lose its central purpose and be discarded by those whom it serves.

When we try to define trade-union democracy, we find ourselves dealing with less tangible issues than when we talk about racketeering and ethical practices. Union democracy must be discussed in the context of the all-too-prevalent turbulence of the industrial community in which unions operate. Perhaps there is no Webster-type, clear-cut

definition of union democracy—particularly one to fit all the different situations which unions face. Nevertheless, encouraging development of functional union democracy is a paramount task before us, as ably pointed out by Professors Summers and Seidman in their excellent papers.

Possibly the best way to approach the problem is to set forth questions supplementing the basic one to be asked of each union: Is this organization democratic? The town-hall type of democracy being outdated in many unions by the spread of their membership, we may ask whether there exists constitutional machinery for delegating authority to democratically-elected representatives? Does the machinery work fairly in practice? Do the elected representatives have the will and power to make basic and major decisions? Do all union members have equal opportunity to run for office without reprisals from incumbents? Do they have ready access to fair appellate procedures against unjust or arbitrary action by the union or its officers? Is there adequate opportunity for the development of opposition against unfair majority rule? Can the membership control and prevent indiscriminate expenditures of union funds? Does the union make a complete and understandable financial accounting to the membership? Can racial or religious minority group workers enter the union with the same "first class" status as the dominant majority group?

A "yes" answer to each of these questions about a particular union would suggest a healthy state of democracy.

Many serious obstacles face unions in maintaining or achieving such democratic standards. Because of space and time limitations, I have in the main limited my observations to but one obstacle to union democracy: the decline in membership participation in decision making.

There are many reasons for this. Many members look upon the unions merely as a device or slot-machine for getting more money and better working conditions. As long as the machine pays off, they are satisfied. Unions have grown older and are taken for granted; union meetings which often tend to be long and dull compete with less arduous tasks—like watching television. New members lack emotional identification with the union, not having had to struggle for existing conditions and gains won by older members. New members often are dues-payers and union members in name but not in spirit; they feel far removed from the decision-making level of the union—especially in the larger unions. Even in the best of unions we often find only a "crisis membership" showing concern and interest only at contract negotiating time or if there is a danger of a layoff or a strike. This brings to mind the story recently carried by one of the labor papers:

In Cincinnati, Ohio, an officer of IUE Local 757 brooded unhappily about the problem besetting his Local and all Local Unions these days—declining attendance at membership meetings. Finally, desperately, he decided to try a little "reverse psychology." The next meeting notice that went out was the shortest ever issued by the Local: "Don't Attend! No Need to Bother! No Entertainment, No Sex, No Drinks. All We're Going to Do is Take a Strike Vote and Raise Dues!" Result—the biggest membership meeting in the Local's history!

Having painted this rather grim picture I think it is only fair to point out that many unions are genuinely concerned and are trying to do everything possible to increase the membership interest and participation. Cases I am about to cite are illustrative of this. They are not necessarily typical, however. It would be difficult because of the many variations in union practices and structure to cite many truly typical cases.

A Guild System

Now, encouraging membership decision making does not necessarily mean that decisions can be made only at general membership meetings. As I indicated, many or most unions find it impossible to get more than a small percentage of the members to attend meetings. The problem is of most serious nature where locals are large, with membership scattered over a wide area in different locations, as in the Teamsters union or in some locals of the Newspaper Guild.

Guild locals in such cities as San Francisco, Philadelphia, Los Angeles, and New York have worked out a "representative assembly" system which seems to encourage the membership to take part in decision making through their elected representatives.

It would be extremely difficult for the Guild's New York Local 3 to have very effective and representative local union meetings. One of the oldest in the 25-year-old international, Local 3 has 8,400 members, employed on some fifty different newspapers, news services, news magazines, a radio station, and miscellaneous publications. The members are scattered through five city boroughs, Connecticut, and New Jersey.

Local 3's Representative Assembly was set up when the local was born, deliberately patterned after the representative assembly idea used by Congress and for like reasons. Assembly delegates are elected by units on the basis of one delegate and one alternate for each 25 unit members. A unit is a shop division. The *New York Times* employees form one unit; the *Saturday Review of Literature* employees form another, etc. Members of each unit elect their own officers, settle unit issues whenever possible, and ratify or reject contracts negotiated by the local union's negotiators for each unit. Units must meet every other month and their procedures must conform with the high standards of democracy set by the international. For example, observers are

encouraged to attend negotiations and all strikes must be voted by a majority of the striking unit.

Each unit has as many votes in the Assembly as it has members in good standing on the first day of the month in which the Assembly meets. Each unit's votes are divided equally among its delegates, and if delegates and alternates are absent, the unit's votes are absent, without proxy. Ordinarily, the New York Assembly has more than 300 delegates.

It meets once a month. The local's executive board may order special meetings, and any 16 Assembly members also may call a meeting, on at least three-days' notice.

The local executive board members have no votes in the Assembly unless they are given votes by their respective units. The Assembly elects its own officers: a chairman and a vice-chairman. Neither may be a member of the local executive board in another capacity; they become board members by virtue of their election as Assembly officials.

The Assembly functions to review or to request board decisions, including salary payments. The Assembly may authorize a strike, subject to unit approval as mentioned above.

Attendance is seldom as much as 150—less than half of the Assembly. This is, however, a better percentage than most local unions have. A controversial issue will of course attract more members. About 30 delegates work on night shifts and can attend only if the meeting falls on their night off.

The Assembly seldom alters executive board decisions any more, but the power to do so is there. This power was used in the forties, when pro-communists and anti-communists were battling for control. In the late forties the anti-communist members gained control and ousted pro-communist local officials. The anti-communists continue this control today.

During those battleground years, the checks and balances of the Assembly were used often to override decisions of the local officials who did not have the Assembly's confidence.

A later example of how the Assembly works during controversy occurred last year. *New York Times* and *New York Daily News* delegates to an Assembly meeting asked for a referendum of the membership on the question: "Shall the Newspaper Guild of New York resist the dismissal of all members discharged after invoking a constitutional privilege when asked by an authorized government agency about Communist affiliation?" The executive board by a vote of 11 to 6 recommended a "no" vote. The referendum sustained the "no" vote by a 3 to 2 majority, out of ballots cast by about 60 per cent of the membership.

The local's stand is contrary to positions taken at the 1954 and 1955 international union's conventions, which recommended that locals "resist by every means possible" dismissals for invoking protection of the Bill of Rights. The convention policy was not made mandatory, however.

In New York, a referendum is mandatory upon a petition of at least 10 per cent of the members in good standing. Instead of a referendum, the Assembly delegates could have referred the above matter to a local meeting. The latter meetings are held at least three times a year.

Edward McNamara, chairman of the Assembly and of the *Times* unit, says there is usually little conflict between the board and the Assembly because both are elected by the same general membership groups. There is a sizable turnover among Assembly delegates—about 20 per cent a year—which increases membership participation. Tradition holds that every department within a unit should have at least one Assembly delegate if possible.

Such "representative assemblies" typify the democracy effectively guaranteed by the union's constitution for some 30,000 Guild members. The constitution requires that all decisions be made by simple majority vote, and prohibits proxy voting. Conventions are held every year, and international officers are elected every two years by membership referendum. In this year's election, typically, there were opposing slates—the administration and the "Independents"—and, as always, each had equal access to the news, advertising, and letters columns of the union's official publication, *The Guild Reporter*.

A Communications Workers of America (CWA) System

Moving on beyond the local level, we next consider an international union convention. On most union structure charts the national convention rates as the highest governing body. To contrast the impressions we may have derived from the recent convention of the Teamsters, we picked out the convention of the Communications Workers of America, AFL-CIO, where all of the delegates were rank-and-file members instead of staff members.

This 20-year-old union now represents some 370,000 persons in the telephone industry, of whom 60 per cent are women. About three-fifths of those represented now belong to the union's 337 locals in the United States and Canada. They pay $24 a year in national dues and about $12 a year in local dues.

Following the union's 1957 convention we sent out questionnaires to ninety-five convention delegates. Eighty-eight returned this confidential (unsigned) and detailed questionnaire seeking reactions to the convention and the way it was run. Questions were asked concerning

reactions to the time allowed to discuss motions, issues, and resolutions and the general running of the convention—whether they felt it was done in a democratic manner, or if only a small group of people influenced the making of policy at the convention. While recognizing the limitations of this questionnaire method and the nature of the sampling, we found the vast majority gave their union an excellent rating on its democratic procedures and fair play at conventions.

The union leadership has developed a number of procedures to encourage greater membership participation as well as democratic competition.

To generate interest in the convention, the union devotes from four to eight hours at the week-long educational institutes to convention procedures. Attending these institutes are 1,000 or so local union officers and shop stewards—a significant portion of the local leadership. In addition, two hours are spent on CWA government and convention procedures at each of the two-day schools, which reach some 4,000 local union officers. Locals are encouraged to submit resolutions in advance to the six standing convention committees whose members are appointed well ahead of the convention.

At the convention itself the most interesting innovation is a combination telephone and microphone system setup on the convention floor to facilitate and speed up delegate participation in debate. The CWA is, I believe, the only organization using such a system. It may be natural that a communications union should adopt such a system.

There are five sets of microphones: privilege, questions, motions, "for" debate, "against" debate. Next to each microphone is a telephone and each telephone leads to a separate parliamentarian seated on the convention platform.

A delegate wishing to use a mike must first discuss it with a parliamentarian to determine priority and timing. This prevents loss of time for out-of-order motions or questions which the chairman might be asked needlessly.

The following motions are made at the "privilege" microphone: to adjourn, to recess, to raise a question of special privilege, to call for orders of the day, or too raise a point of order. The uses of the other microphones are obvious by their names.

If a delegate disagrees with the parliamentarian's ruling, he may appeal to the convention chairman.

Five minutes is the limit for debate at the microphone. No person may speak twice on the same topic so long as other delegates wish to speak for the first time. The chair must give the delegate one-minute's notice before expiration of the five-minute time. Each user of a mike must identify himself fully. "For" and "against" debates are alternated. Delegates are recognized in order as they arrive at the telephone.

Voting during conventions is on the basis of one delegate, one vote, except when 20 per cent of the delegates on the floor may call for a roll call vote. Thereupon each local determines how to assign votes on the basis of per capita membership as decided by the credentials committee.

No proxy voting is permitted except that a local of less than 200 members may assign its proxy to a delegate from another local attending the convention.

Representation is on the basis of one delegate and one alternate for each local in good standing with less than 200 members; two delegates and two alternates for a local with 200 to 400 members; three pairs for a local with 400 to 600 members; and an additional pair for each additional 400 members. A union with 190 members would have one delegate; a union with 1,900 members would have six delegates.

Before leaving the CWA, it is pertinent to note that A. T. Jones, vice-president, ran for the presidency in opposition to the incumbent president, Joseph A. Beirne, at the last CWA convention. Jones had the same access as did the administration to the credentials and list of delegates and to holding caucuses and parties at the convention itself. Both Jones and Beirne had rank-and-file committees campaigning for them and soliciting campaign funds from the local unions. In addition, both sides put out paraphernalia usual at convention elections. Prior to the convention, Jones circulated to the local unions statements of his position and his reasons for opposing the administration. While we found here the usual practice of not giving the opposition equal access to the union's newspaper, Jones's candidacy and his statement of reasons for running against Beirne were carried in the union's paper prior to the convention.

A United Automobile Workers (UAW) Program

In proceeding to the next case, I must reveal my occupational bias which is reflected by eleven-years' work in and with the trade-unions. Eight of these years have been in the field of workers' education. In the long run, I am convinced that many headaches unions have could be solved by a well-run and adequately financed education program among local union officers, stewards, and members. While a growing number of unions have education programs, not many of them are adequately staffed or financed. What is even sadder, among the unions that really need an education program, such as the building trades and the older craft unions, there are none to speak of. There are those among the union leadership who still look upon workers' education as an unnecessary luxury or frill or as an "egg-head activity" which may only develop troublemakers or, what is worse, potential rivals for office!

Probably the most intensive and extensive education program by

any union is that of the United Automobile Workers, AFL-CIO. The current focus of the union's educational activities is on their "Heart of the Union" program.

The "Heart" system is defined as a "core training program designed to present the history, theory, method, aims and goals of the labor movement to UAW members." A study shows it to be closely oriented to the union's goals as set forth by the last convention in April. It is designed to enlighten and help convince the members that the following six propositions are true:

1. The UAW has a proud background of history.

2. Only industrial unions can adequately represent the crafts in the plant.

3. Big business dominates the press and the Republican Party, and therefore all loyal members should help support the union's political action campaigns.

4. Federal aid to education is essential, a shorter work week is possible soon, and unions must be permitted to organize politically.

5. The publicity about unions at the present time makes it necessary that additional efforts be made to reinforce ethical procedures in the labor movement.

To quote from one of the manuals used in connection with this last clause:

> It places an obligation on every member to take part in union elections, not to do anything to undermine the integrity of elections, to work for trial procedures which are considerate of human rights of union members, to be doubly scrupulous in the handling of union funds and to engage in political action in a way that strengthens and enhances democratic choices rather than promotes anything that smacks of boss rule.

Implementing this point is mention of the UAW Watch-dog Committee which was created by the last constitutional convention. It provides an independent Supreme Court of Appeals for any UAW member who believes he has a grievance in the union. Certainly its concept encourages members to "stand up for their rights," so to speak. Past experience indicates many UAW members already have little reticence about this point.

6. There is a "very powerful case for substantial wage increases" in 1958.

Each of the six points makes up a separate program in itself. The first part is a film, followed by study of a special issue of the *UAW Ammunition* magazine, formerly issued by the union. Next comes a buzz-session discussion, a summary by the study leader, and the filling out of quizzes by the participants to show their impressions and conclusions.

Brendan Sexton and other education department staff members have

told me of their great delight at the enthusiastic response they have received so far to the "Heart" program. They hope to get beyond the union officers and shop stewards and reach the assembly-line ranks.

By next summer they plan to reach a total of 150,000 members, more than 10 per cent of the average membership, in a third of the union's nearly 1,500 locals. They want to develop 5,000 new discussion leaders, and already nearly 1,000 union members have volunteered to lead classes for the first time.

There also will be some 18 summer schools, with some 4,000 students; 500 week-end institutes, with about 50,000 participating; and some 500 additional classes conducted in co-operation with university systems to reach some 5,000 persons.

This program is costing the members nearly a million dollars a year, more than half of which is spent by the international. In terms of cost, size, impact, number of staff (38 full-time "educational representatives") and classes held, number and type of communications media used, political successes, and numbers of members reached, "the members of the UAW have done very well indeed, better than has ever been done before by wage-earners anywhere," to quote from the union's 1957 convention education committee report.

The UAW is an important and major force in the trade-union movement. Its education program merits the focus of much more study than we have been able to give it here.

An organization as influential as the UAW has a tremendous responsibility to encourage new thought throughout the trade-union movement.

Walter Reuther suggested this in a speech he made at the final CIO convention in 1955, when he said:

> If the new labor movement is just a big and more powerful pressure group it will fail, because the problems that need solution will not be solved by creating a more powerful competing pressure group in America. We will solve these problems only if we demonstrate the vision, the social and moral responsibility essential to deal with the underlying causes of the problems and to find answers to them.

These three case studies of methods used to promote membership participation in the life of the union are symbolic of the many sincere efforts being made to increase union democracy. Such efforts are necessary and important but union democracy is based on more than adequate participation.

The difficulties of finding cure-all methods of stimulating democracy are apparent when we note some of the suggested remedies. Even the apparent effectiveness of the two-party system in the International Typographical Union does not appear to lend itself to application to unions in larger industries with different structures, traditions, and

operations—such as the mass-production industries. Likewise the suggestion that the number of years a union officer could hold office should be limited does not have validity in the union framework. The competency and the integrity of the man should be the chief criteria. A close study of a number of unions with democratic traditions and reputations shows they tend to keep their leaders only so long as they are doing a competent and effective job. The democratic International Chemical Workers Union now has its third president in office in the last six years, for example.

The argument that unions are too large and should be cut down to size or decentralized further has no validity and little to do with union democracy. A study of labor history will show that unions tend to follow the organization patterns set by industry. This was as true when companies operated in small single plant units as during the present multiplant corporation pattern. Obivously you can have the basis for "collective bargaining" only when the parties are of near equal strength and responsibility.

Ernest Bevin, when once asked, "What makes a labor leader?" replied: "The man who sits across the table from him." This suggests the point that in far too many instances industry spokesmen have not accepted unions as permanent institutions and are constantly doing battle with them—whether it be on the level of organizational, grievance arbitration, negotiating, or strike-lockout activities. (For an extreme example of this, look at the record of the southern textile industry.) The psychological environment created by such situations requires union leadersip to move quickly and effectively—and definitely does not encourage a growing use of democratic procedures.

Proposals for restrictive and punitive legislation against unions would also be detrimental to the furthering of this democratic procedure. The proposal to eliminate industry-wide bargaining (which again is determined in great part by the nature and organizational pattern of the industry) would tend to weaken if not destroy the unions involved. On the other hand, legislative proposals to provide for full disclosure of union finances and of pension and welfare funds run by both unions and management is needed and will be helpful. Legislation going much beyond this point would not help and might well hinder the furtherance of union democracy.

Unions tend to reflect the nature of the society and culture in which they function. In practice our culture does not really condemn the materialistic notion that "it's okay to make a fast buck." Hence, if you will forgive the oversimplification, we get some of the union and management corruption. In contradistinction, in Great Britain, where I spent my senior Fulbright year studying their trade-unions,

I saw no evidence of union corruption or racketeering—and this is in keeping with the climate of integrity of the British society and culture. We also find in our society the tendency to sidestep around democratic procedures and to take shortcuts when we are in a hurry to get things done or can rationalize that an emergency exists. In other words, we put into practice the totalitarian philosophy that "the end justifies the means." This also reflects itself in a number of union activities, especially if undemocratic methods can be rationalized by pointing to real or imaginary dangers.

Perhaps the most important and basic requirement for union democracy is that the leadership sincerely believe in the democratic method and want to encourage membership to "take hold of democracy." In turn, the membership must have the functioning desire to be democratic and act responsibly. There are encouraging signs that a growing number of the union leadership recognize this need, for the major burden of achieving more widespread and greatly needed union democracy rests upon the trade-unions themselves.

AGENDA FOR A NATIONAL MONETARY COMMISSION

THE FINANCIAL STRUCTURE

By HERBERT STEIN
Committee for Economic Development

Last spring when I was invited to give this paper, I replied that I did not believe there was going to be a monetary commission. Nevertheless, since CED had for long been one of the leading advocates of such a commission I felt some obligation to present my interpretation of the thinking underlying this recommendation.

The organizers of this program proved to be more foresighted than I was. There is going to be a commission. And it is being set up by the CED. I am sure that the commission when established will profit greatly from what Messrs. Angell, Bernstein, McLeod, and Gurley will say here today.

Because the commission is being set up by CED, I feel it necessary to make a certain disclaimer. The commission, once named, will be independent of CED. It will have its own research director and staff. It will determine its own agenda, subject only to initial terms of reference stated in broad and general language. The suggestions I offer should not be regarded as a preview of the commission's agenda.

In the past ten years there have been many proposals for *ad hoc* study groups in the field of finance. Each of these has been popularly called a proposal for a "Monetary Commission." But I believe without exception this term was used as a shorthand expression. None of the proposals contemplated a study confined to money in any strict sense. In fact, in 1948 CED explicitly stated that it wanted to go beyond the limits suggested by the name "Monetary Commission" and suggested the term "Commission on National Monetary and Financial Policy." In January of 1957, the President recommended a "National Monetary and Financial Commission." The CED commission is called a "Commission on Money and Credit," and even this I regard as a compromise between brevity and accuracy. Despite the title assigned to this session, I shall be talking about a commission with the broader scope implied by these earlier suggestions.

Since I shall be listing problems to be studied by the commission, I would like to comment on the meaning of the word "problem" in this connection. To say that a certain policy or institution is a problem to be studied does not necessarily imply a belief that the policy

or institution is deficient in any respect. It may only mean that the policy or institution is subject to criticism or distrust by people whose support is important to its success. The result sought is reform of policies and institutions that need reform and increased understanding and support of the *status quo* where that is deserved.

For an economist to suggest that a certain question should be studied by the commission does not imply that the economist does not think he knows the answer. The commission does not arise out of the demands of economists. I am sure that economists will be helpful to the commission and that the commission will be helpful to economists. But it is not a commission of or for economists. Some of the questions it should ask will be questions to which economists feel they already know the answers but on which informed and influential lay opinion is uncertain or divided.

From the standpoint of the economist, questions for the commission to study fall into three categories: (1) questions about which the economist feels ignorant; (2) questions that the economist feels able to answer but on which he recognizes that other economists would give different answers; (3) questions on which most economists would agree but which are unsettled issues in informed lay opinion.

The third category is probably small. The issues on which lay opinion is divided in this field also divide economists.

Of course, the commission is not really in search of an initial agenda. The commission exists because certain questions exist. The commission must try to answer the questions that brought it into being. But the commission will not be confined to these question. Its existence will attract questions. And in the course of its own work it may well discover that the most important questions are not those with which it started.

The part of the commission's agenda that has been assigned to me for discussion is the financial structure. The line between this subject and the subjects assigned to the other speakers could be drawn in a variety of ways. At the risk of some duplication I have interpreted my assignment as covering all parts of the commission's scope not obviously assigned to the others. The most important consequence of this is that I shall not consider questions relating to the objectives, instruments, operations, or organization of the Federal Reserve System, defined as the Board of Governors, the Open-Market Committee and the twelve Federal Reserve Banks.

The commission's interest in the financial structure may usefully be divided into two parts. One part is concern with the relations of the financial structure to the over-all level and stability of the economy—essentially with aggregate demand effects. These relations are of several

kinds: the influence of the financial structure upon the effectiveness of Federal Reserve policy, the possible use of the financial structure to complement Federal Reserve policy, the possible independent contribution of the financial structure to stability or instability. The second part is concern with the effects of the financial structure upon the allocation of capital among intermediaries, uses, and users. I shall divide my own discussion of the commission's agenda into these two parts.

I. *Stability Effects of the Financial Structure*

The Federal Debt. The big problem that initiated the postwar movement for a monetary commission was the inhibition of flexible monetary policy by the large federal debt. This was back in 1947 and 1948. Since then there have been two major official investigations of the relations between monetary policy and the debt: by the Douglas Committee and the Patman Committee. There has been a fundamental change in monetary policy, abandoning any commitment to continued maintenance of federal debt yields at any predetermined level. The federal debt has become smaller, absolutely and especially in relation to most relevant magnitudes in the economy. And yet the question of the federal debt continues to haunt monetary discussion and, to some extent, monetary policy.

One of the questions that recurs is whether a restrictive monetary policy can be carried out in the face of frequent refundings of federal debt. There seem to be two possibilities that worry people.

One is that in a time of tight capital markets the federal government may be unable to refund its debt at any price without Federal Reserve support. The implication of this is that the investors who would buy federal bonds, especially the financial institutions, will have committed their anticipated funds to private borrrowers. These anticipated funds will include funds arising from the redemption of maturing federal debt.

The other possibility is that the terms of a refunding issue that seemed perfectly acceptable when announced will turn out not to be acceptable without Federal Reserve support when the subscriptions are received. This implies that an error was made in estimating the terms necessary to sell the issue. However, the significant point in this argument is not the error but its alleged irreversibility. The initial error only serves to create the problem where the Federal Reserve is required, not merely to prevent an expansion of private credit, but actually to bring about a contraction. It is claimed that once the Federal Reserve has allowed an expansion of credit which it did not really desire in order to make the underpriced Treasury issue a success, this credit expansion cannot be rolled back. No tightening of reserve

positions, no increase of the yields of subsequent Treasury issues, will induce lenders to contract the private credits they expanded during the period of Federal Reserve support to the Treasury.

It can be seen that the problems in the two cases are similar. In each case the lenders have committed their available funds and no change in the terms on federal issues will change these commitments. Therefore, in order to find holders for the federal debt, expansion of bank credit is permitted.

I must say that this whole line of argument is not convincing to me. It seems to assume that financial institutions make plans and commitments in disregard of the well-known fact that the Treasury is going to come into the market at certain times for certain amounts of money. It exaggerates the difficulty of reducing the total amount of private credit outstanding by treating that amount as one big lump rather than as a large number of small pieces, some of which are always being turned over, renewed, or replaced. And it treats the federal debt as a residual in the portfolios of all investors—something they hold only when they have nothing else to do with their money.

Still, this or something like it is being said by people who know the capital markets and money markets intimately. Monetary restriction is said to have been inhibited by such difficulties at times in the 1955-57 boom. And suggestions are offered about the desirable composition of the federal debt in an effort to avoid these inhibitions on monetary policy. Therefore, it seems to me this subject belongs on the agenda of the commission.

Certainly it is common to say that in certain periods—which last for months and years—it is impossible to sell a long government bond. Not just expensive or even unwise, but impossible. This is another position I do not understand. And while I would not suggest that the commission study everything I do not understand, I would like to see them study this one.

There is another hypothesis about the relation between the debt and monetary policy that belongs on the commission's agenda. This is that even if the Federal Reserve does go through the steps of monetary restriction, the existence of the debt will keep those steps from being effectively restrictive. The process is said to run something like this: Suppose that there is an expansion in the private demand for credit, but the Federal Reserve does not allow the total assets and deposits of the banking system to rise. The banks will sell off some of their shorter dated government securities which will be bought by corporations and others who are induced by a rise of interest rates to switch from holding cash. As a consequence, even though total bank assets do not rise, bank private loans and investments do. And even though bank deposits do

not rise, privately-held liquid assets, including governments, do rise.

Something like this does happen. At least during the period of monetary restraint from 1955 to 1957, bank loans and investments rose substantially. Some people have pointed to this as evidence that monetary restraint does not work. In fact, there is even a disposition in some quarters to regard monetary policy as having a perverse effect, since loans and investments typically rise more when a policy of monetary restraint is being followed than at other times.

Probably the common-sense view of this process is that it does reduce the effectiveness of monetary restraint—per dollar of restraint on the supply of bank deposits. That is, it increases the degree to which restraint on the supply of money is offset by an increase in velocity. But this offset is not complete. The most important policy consequence is that Federal Reserve actions have to be of a larger scale than would otherwise be necessary.

However, this policy conclusion is not entirely satisfactory. It is desirable to minimize the burden on the good judgment of the Federal Reserve in deciding when and by how much to act—and to create, if possible, conditions in which fairly acceptable consequences would result from adherence to a fairly simple rule. This suggests that we should look for ways to make velocity more stable, which would include ways to reduce the tendency of the banks, and possibly other financial institutions as well, to shift short-term government debt onto the public when credit demands increase.

Moreover, I find the analysis of the process—so far as I am familiar with it—incomplete and puzzling. It seems to me that the explanation of the equilibrium of the individual bank is not adequately developed. For example, if the banks add to the public's liquidity by switching out of short-term governments, they are also reducing their own liquidity. Does this have no effect upon them, up to what limits will they be willing to do it, and on what terms?

A question that I find most interesting, perhaps because it only struck me recently, is what would happen if banks competed for deposits. Suppose that the demand for bank credit increases and banks have the opportunity to make more money by making more loans and investments. Even though the deposits of the banking system as a whole are limited by the reserve position, individual banks can still attract deposits from others and gain the ability to make more investments. If banks competed with each other for deposits by offering higher interest rates on deposits, what would be the effect of this on velocity, on the demand for money? When we say that a rise of interest rates reduces the amount of money people want to hold—increases velocity—are we not implicitly assuming a rise of interest rates on other assets relative

to the interest rates on money? Would velocity be more stable if fluctuations in the demand for credit caused variations in the rate of interest yielded by money?

I realize that present law prohibits the payment of interest on demand deposits and that even without this law there are institutional impediments to flexibility of interest rates on deposits. But the commission need not take existing law and institutions as unchangeable.

Time does not permit me to mention the many other questions related to or arising out of consideration of the structure and management of the federal debt as part of the financial environment in which monetary policy operates. I would, however, like to call attention to one that may belong in Mr. Angell's or Mr. Bernstein's area but is in danger of not being listed by economists because they regard it as so simple. This question is how monetary policy, debt management, and interest rates are related to each other.

It seems to me that there are three views about this relation: (1) that monetary policy and debt management do not affect the average level of interest rates, when we are operating at full employment, although they may affect the term structure; (2) that monetary policy viewed as an influence upon the total quantity of money does affect the average level of interest rates but that the particular way in which monetary policy is operated or the debt managed does not affect interest rates; and (3) that interest rates are influenced both by general monetary policy and by the particular techniques of monetary policy and debt management used—for example, that it makes a difference whether the Federal Reserve raises rediscount rates or operates in the open market, or whether the Treasury offers a 3¼ per cent or a 3½ per cent bond.

These differences of opinion, perhaps not expressed in just this way and perhaps not expressed at all, underlie much argument among laymen about monetary policy. While I suppose everyone here has a position in this area, I do not find any consistent agreed body of thought among economists that can be presented to government officials, congressmen, or businessmen as the certified truth. I think it will be important for the commission to try to illuminate this question.

The Nonbank Intermediaries. Almost every proposal for a financial commission has called for investigation of the significance of nonbank intermediaries, which are assumed to have grown in size and diversity. Messrs. Gurley and Shaw have, of course, been leaders in calling this problem to the attention of economists.

There are a number of possible ways in which the nonbank intermediaries might be significant. In the area that I am now considering—the area of aggregate or stability effects—their significance is similar

to the significance of the bank-held debt. That is, they provide a way in which the public can meet an increase in the demand for credit with less reduction in its liquidity than would otherwise occur. In consequence, the increased demand for credit is more inflationary—generates more increase in velocity—than would otherwise be the case.

Suppose, for example, that there is an increased demand for mortgage money and that the total quantity of money is constant. Mortgages might be sold directly to members of the public who are induced by higher interest rates to part with some of their cash. Other things equal, this is inflationary. But as the process goes on, the public finds its supply of liquid assets declining relative to its total assets and total income. This sets up resistance to continuation of inflation. However, if we introduce, say, savings and loan associations into the picture, then the public can take savings and loan shares instead of holding mortgages directly. Their total liquid assets would rise and presumably the limits to the inflationary development would be weaker.

The comments already made on the similar aspects of the federal debt case apply here. There are a few other questions that might be brought to the commission's attention in this connection.

It would be useful to distinguish those particular institutions to which this argument applies from those to which it does not. Essentially the relevant institutions are those whose liabilities are significantly more liquid than their assets. This probably makes savings banks and savings and loans and finance companies the most important cases.

Probably the most important cases tend to be relatively specialized in home mortgages. There is a question whether fluctuations in the growth rates of these institutions will coincide with fluctuations of general business—a question important to judging whether their effect is likely to be stabilizing or unstabilizing.

For evaluating the stabilizing or unstabilizing effects of these institutions, it is necessary to distinguish between their absolute size or their long-term growth rates on the one hand and their cyclical variations on the other.

The Influence of Private Debt. At various times in the past there has been concern about possible unstabilizing consequences of the size or rate of growth of private debt. This concern has not, so far as I know, been prominent in the postwar proposals and discussions about a financial commission. Yet there is at least one hypothesis about the effect of the growth rate of private debt that deserves the attention of the commission. This is the hypothesis that has been advanced by Mr. Homer Jones in several articles, and which I would interpret as follows.

Suppose that the community wants to hold a certain percentage of its savings in the form of the liabilities of savings institutions. Suppose

further that the savings institutions want to invest only in "safe" assets, defined as debt backed by a certain percentage of equity. These percentages may not be consistent. The amount of safe assets the community wants to hold may exceed the amount the economy can generate. For example, everybody may want to hold only debt backed by an equal amount of equity. The investment process cannot go on indefinitely on this basis. If we start with debt less than half of the value of the underlying assets, investment can go on, financed entirely by debt, until the debt asset ratio reaches 50 per cent. But there is no way to finance investment beyond that.

There are several questions that may be asked about this hypothesis. Is it impossible for the structure of yields on different kinds of assets to adjust so that savers are willing to hold the kinds of assets the economy can generate? In the illustration given, could the yield on safe debt decline so far, relative to the yield on equities, that the public would be willing to hold, say, 50 per cent of its savings in equities and 50 per cent in debt?

If the general argument is tenable, in principle, are we in fact in any danger of exhausting our ability to generate the desired amount of safe debt? At the end of the war this ability was extremely large, because the inflation had greatly increased the value of the underlying equities. But since the end of the war, despite some further inflation, debt-equity ratios have risen. It would be useful to estimate, on the assumption of no further inflation, for how long we could continue to divide our savings between debt and equity in the recent proportions before reaching a ratio of total debt to total equity that savers and savings institutions would regard as unsafe?

If there is a danger, what can be done about it? The most common suggestion is that the financial intermediaries should be more effective in translating the kinds of assets the economy can generate into the kinds of assets the public wants to hold. This would require some change in laws, supervisory regulations, and established practices of various financial institutions. Certainly we have come a long way in transmuting illiquid and risky assets into perfectly safe and liquid assets. Since government can create perfectly safe and liquid assets out of no assets at all—i.e., it can create money—there is no apparent limit to the possibility of assuring and liquifying any assets, with government help. But there is a real question about how far it is desirable to go with this, and whether there is not a social purpose served by the reflection of the risk and illiquidity of the underlying asset in the asset held by the ultimate saver.

The Federal Budget. The federal budget is a critical part of the financial environment in which monetary policy operates. I recognize

that consideration of the federal budget would greatly complicate the commission's task, and I do not have space in this paper to discuss the problems that might be considered under this head. However, I would like to indicate why I think it belongs on the commission's agenda.

It has been my observation that when people, especially noneconomists, dip themselves into the problems and possibilities of monetary policy, they are likely to be tremendously impressed with the difficulties. There is a tendency to shy away from placing great reliance on monetary policy and to recommend in a rather vague way great reliance on instruments that they have not studied. The major alternative or supplementary instrument for many purposes is budget policy. If the commission is to make a reasonable appraisal of the problems of using monetary policy, it should also familiarize itself with the problems of the alternative.

II. *Allocation Effects*

I have left myself little room to talk about questions on the allocation effects of the existing financial structure. This may be symptomatic of what I believe to be a fact: that the commission may make its greatest contribution in the area of allocation effects. Economists of my generation have been so concerned—perhaps bemused is the better word—with stability effects of finance that they have left an especially big void in the field of allocation effects.

We have two main concerns with the allocation effects of the financial structure. First, does the structure tend to distribute capital among alternative uses in accord with the productivity of those uses. Second, does the structure tend to offer to potential savers a return commensurate with the productivity of capital in our economy, so that decisions about the amount of saving accurately reflect the returns.

One of the main facts underlying suggestions for a commission has been the proliferation of specialized financial institutions, the significance of which is felt to be large but unclear. We have had some occasion in CED to talk with well-informed people about the significance of this development and we encounter two points of view. One is that the emergence of new institutions shows inadequate adaptability of existing institutions to changing financial needs and is evidence of inadequate adaptability of the system as a whole. The other view is that the new institutions show how well the system adapts to meet new needs. A question that arises from these views is whether, conceding that the new institutions represent adaptation, the adaptations might come quicker, and at less cost, if they came to a larger degree through change in the practices of existing well-established institutions. Also, in some important cases the new institutions have been government or

government-supported institutions, and there is a question whether this is either a reliable or a desirable means of adaptation.

Such questions shade off into another, which I find quite puzzling. This is, what is the proper relation between the character of the assets of a financial institution and the character of its liabilities. Does the relative proportions in which savers want to hold, say, bank deposits, savings and loan shares, and insurance reserves affect the relative supplies of funds for business loans, home mortgages, and corporate bonds? If it does, is there any necessary or good reason why it should? If I decide that I want the special combination of safety, liquidity, and yield that I can get from savings and loan shares, have I made a decision that should increase the supply of mortgage credit particularly?

It seems to me that the kinds of assets the savers want to hold should make a difference in the kinds of assets the institutions hold. But I doubt that it should make the kind of difference it now makes. I think we would have to worry about this problem even if our financial institutions were entirely unregulated. The financial business is, it seems to me, peculiarly affected by conventional and convenient rules about how it should operate, and we cannot assume that these rules are the most appropriate to the functions of the various institutions.

But, of course, the financial business is overrun with differential supervision, regulations, taxes, insurance of assets, or liabilities and reserve requirements. There is no basis for assuming in such conditions any automatic market adaptation of the character of assets to the character of liabilities. Certainly the commission will want to study the appropriateness of these differential policies to the different functions of the institutions.

One aspect of this problem to which special attention has been called is the alleged discrimination against commercial banks resulting from their being the channel for monetary control. Presumably this implies also discrimination against the kinds of investment that are particularly dependent upon commercial bank financing.

If the question of discrimination against banks is studied, as I think it should be, I hope a distinction will be noted between possible discriminations arising from the monetary role of the banks and the consequences of other public policy toward banks. It seems to me at least arguable that the public gets the amount of money it wants to hold, just as it gets the amount of other assets it wants. Monetary policy does not create any special conditions for the banking system in this respect. Public policies that affect the relative amounts of bank deposits and liabilities of other institutions the public wants to hold will affect the relative growth rates of banks and other institutions. These policies may discriminate for or against banks. But it is not clear that their

particular role as controlled money-creators creates any unique problem for banks.

In considering the allocational effects of the financial structure, the commission should not confine itself to the flow of funds through financial institutions. It should also look at the flow of funds that does not involve intermediaries. For example, it should consider once more the old but still unresolved question of the effects of the undistributed earnings of business. Do existing tax laws and other conditions make the proportion of business earnings retained by the business and invested in the business too large, from the standpoint of the efficient use of capital?

The allocational effects of the financial structure should be studied by examining the experience of demanders of funds as well as by examining the behavior of the sources of funds. Undoubtedly the commission will want to investigate that hoary subject: the financing of small business. The Federal Reserve is now undertaking to reduce the deficiencies in our knowledge of this subject. Perhaps the commission can supplement this effort. But it may be that the commission's main contribution would be to elucidate what is relevant and irrelevant in this field: what we mean when we say there is a problem and what are the standards by which we should judge solutions.

In this connection I hope the commission will pay particular attention to housing finance as the outstanding case of powerful government intervention in a particular credit market. To point out the dangers and possibilities of the steps the government has taken in housing finance would help, not only in rationalizing that program, but also in judging the desirability of similar steps in other markets. It seems to me that we have gone a long way in the housing field without knowing whether we are trying to perfect the market or to supplant the market, to stabilize the housing industry, or to stabilize the economy. I think it would be helpful if the commission could satisfy itself on whether this program of guaranteed loans, insured liabilities, and federal lending has added to economic stability, efficiency in the allocation of funds, and efficiency in the construction and financing of houses.

The commission should investigate the adequacy of our financial structure for meeting two kinds of capital needs that have not been much represented in the recent complaints about the present system. They are needs for financing foreign private investment and for financing an individual's investment in his own education. The importance of these two uses of capital to major objectives of national policy is clear. It is also clear that they have received much less attention than many other better-supplied claimants for capital.

I shall conclude by naming one problem that I could do no more

than name if I had a day to talk about it. There are so many difficulties that could be eased if we could increase the rate of private saving. Economists tend to be hopeless about doing anything in this direction, and they may be right. But the possible gains are so great that the commission should, I believe, look seriously and open-mindedly into what might be done to increase saving.

THE MONETARY STANDARD: OBJECTIVES AND LIMITATIONS

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Any considered set of decisions about the monetary standard necessarily implies prior decisions about how both the standard itself, and also the monetary and financial systems as a whole, ought to operate. Indeed, the second set of decisions largely determines the first. In what follows, therefore, I shall be primarily concerned not with the problem of the selection of the monetary standard in the narrow technical sense but with these wider antecedent questions.

I

I should like to begin by considering briefly the general performance of our economic system as a whole in recent decades, as any National Monetary Commission would surely likewise wish to do. It is self-evident that that performance, and also the record of the various controls we have tried to impose on the system, leave a good deal to be desired. It will take another generation before the depression of the thirties ceases to be a desperately vivid memory. Since 1945, we have had two substantial if brief recessions and may now be on the brink of something worse; the general levels of consumer prices have risen nearly another 60 per cent, not solely because of the second World War nor because of the Korean war; and our money and capital markets, though they have escaped any real crises, have fluctuated rather widely. This is not a picture of an economy which is functioning in optimal manner.

It is true that in the last decade our gross national product, as expressed in real terms, has increased some 40 per cent from the postwar low and is now much larger both in absolute and in per capita size than that of any other country. But a substantially larger volume of output could surely have been achieved in the last decade, taken as a whole, had the economy been functioning better. The increases in output which did not take place during the two recessions—the potential gains which were lost—were not made good in the subsequent expansions; these expansions merely resumed roughly the previous average rate of growth.

Moreover, our history of marked though not severe instability and fluctuation since 1945 and of price inflation has unrolled despite the fact that we have had more powerful and diversified instruments of

control available than ever before in our history. At least until now only part of these controls have been used, and the record of the others is not entirely reassuring. We have had more success in dealing with instability of real output since 1945 than in earlier decades, but even here the record is obviously far from perfect. We have had much less success in dealing with inflationary pressures than in the comparable period from 1918 to 1929.

II

A large variety of factors have contributed to our instability and inflation in the last twelve years, and it would be inappropriate to try even to enumerate them all here. I think, however, that some of the most important of them have had to do either with the character of our monetary and fiscal policies or with changes in the structure and functioning of our monetary and financial system. Since most of these policies and changes are familiar and indeed obvious, it will suffice to do little more than list them.

1. The second World War left us with both an enormous federal debt and an enormous volume of pent-up private demands for goods. Given these conditions, however, the effects of the Treasury's debt-management policies, and especially of its insistence until the accord of 1951 on maintaining high prices for its security issues, by hindsight could only be inflationary.

2. The Federal Reserve probably did about as well as could be expected under the circumstances until 1951, and it certainly prevented any rapid increase in the money supply, despite the great pressure of general demand. But the removal of Treasury dominance did not open a glowing new era in its history. Despite the skill and devotion of its leaders, it was not able to prevent the recession of 1953-54, perhaps because its tools were not sufficiently comprehensive nor sufficiently powerful, and the recent sharp reversal of its discount-rate policy seems to me disquieting. It is disquieting, not because I disagree with it, but because the preceding increase, in August, was by hindsight ill-advised: the cyclical peak in general business activity was probably reached at least a month earlier. The constant threat the Federal Reserve faces is that its actions may either be too weak or, because of lags in knowledge and in the impact of the effects of the actions, may for a time be excessively strong, and may even reinforce undesirable movements in the economy instead of offsetting them.[1] It walks a narrow line, and one slip can be very costly.

[1] See the excellent discussion of these lags by W. L. Smith, *A.E.R.*, Sept., 1956. It can also be objected that the specific actions and policies of the Federal Reserve at any one time have not always been mutually consistent and that this makes for uncertainty in the minds of the public and hence for instability.

3. Our total net debt, taking public and private together, actually bears a somewhat smaller proportion to GNP now than in 1929. But the changes in the composition of the aggregate national debt structure as compared to the prewar situation have been striking. The proportion of government debt, of course, is vastly larger. Within the private sector, corporate long-term debt has declined substantially in relative importance since 1945, but the proportion of noncorporate mortgage debt has increased tremendously. The increase in consumer debt has also been enormous. I think that in the main these changes have reduced the responsiveness of the private economy to changes in short-term market interest rates and to other monetary controls,[2] either because the types of debt that have expanded most are relatively insensitive to such changes in the short run or because they have increased the relative supply of close substitutes for cash liquidity.

4. The wide changes in the composition of the portfolios of the commercial banks are familiar, as is the decreased average dependence of most of the larger nonfinancial corporations on commercial bank loans —though this latter trend has recently been reversed to some extent.

5. The increase since 1945 in the size of the financial intermediaries other than commercial banks has been enormous, and their total assets now appreciably exceed the total assets of the commercial banks themselves. The outstanding contributions of Professors Gurley and Shaw to the interpretation of this development are known to all students. I agree with them that the operations of these institutions increase the difficulty of working our present types of monetary controls, which in considerable part do not bear on them directly. In particular, the movements of security yields since 1945 do not, to my mind, indicate that there has usually been any very large and quick response of long-term nonfederal yields to changes in Treasury bill rates, Federal Reserve discount rates, or other measures of monetary control.[3] I also think that these institutions impart an inflationary bias to the bond and

[2] And see the footnote 3, below. The greatly increased reliance of many corporations on internal sources of funds to finance expansion also reduces, of course, their sensitivity to changes in short-term interest rates.

[3] Even if Dr. Roosa's thesis with respect to the effects of interest-rate changes on lenders be accepted, as long as the Federal Reserve operates chiefly in the short end of the market alone it can affect the markets for long-term nonfederal securities only at one remove or more; and the effects, if they appear at all, are likely to appear only with a lag. The present type of Federal Reserve operation assumes that control can be exercised over the whole financial system by controlling transactions carried on at a sort of margin—by controlling interest rates and quantities at the short end. But this requires further and somewhat difficult assumptions about competition and substitutability.

The recent historical evidence on interest rates is not clear cut. The general movement of Treasury bill rates was quite heavily upward from mid-1947 to 1953, except for the end of 1949, and the Federal Reserve discount rate (New York) rose by steps from early 1946 to early 1954, with no reversals. But the yields on corporate Aaa and Baa bonds and on state and local governments fell on balance from early 1948 to 1951 and, with a brief exception in 1953, did not really rise sharply until 1956. The general movement of the secondary market yields on noncorporate mortgages (now held heavily by nonbank

mortgage markets or at least retard downward price adjustments in those markets.[4] To this extent they likewise retard and probably weaken the impact on the economy at large of general measures of monetary restraint.

6. A series of other pressures and biases toward inflation, or at least against deflation, have developed since 1945. Not all of them, of course, are monetary or financial. The effect of the Treasury's policies until after 1951, already referred to, is obvious.[5] So is the impact of the reconstruction demands of other countries after 1945, the effect on the federal budget of the international policies of the USSR,[6] and the effect of the great surges of technological innovation since the war. These surges powerfully increased the demands for capital goods and hence the short-run pressures on resources. Almost equally obvious is the

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intermediaries) was apparently nearly horizontal from the end of 1947 to early 1951, and thereafter on balance gradually upward, but they, too, did not rise sharply (again except briefly in 1953) until early 1956. (I am indebted for preliminary data on mortgage yields to a draft Ph.D. dissertation in Columbia University by J. M. Guttentag, on postwar housing and security markets.) Stock yields fell from 1948 to 1955, and then leveled off. These movements do not suggest that since 1948 there has usually been any very large and quick response of long-term nonfederal rates to the bill rates. There were, undeniably, large changes in the "availability" of the supply of capital—in the terms offered, other than rates—but it is again not clear that these changes usually followed promptly on Federal Reserve action, whether through action on short rates, member-bank reserve requirements, or the volume of "free" reserves. Moreover, on the demand side the evidence indicates that the demands both for noncorporate mortgage loans and for consumer credit have been in fact (whatever the explanation) relatively insensitive to changes in interest rates; they responded chiefly, in the short run at least, to changes in terms.

From 1918 to 1939, short and long rates moved on the whole more closely together than in 1946 to 1957. I think, though I cannot prove, that the growth of the nonbank intermediaries explains a good part of the difference. These intermediaries centralize the collection and investment of large volumes of money savings in security markets which are large enough to be semi-independent; some of them engage extensively in forward commitment operations (sometimes as much as two years or more ahead); they try to keep fully invested; and on balance they are more interested in average than in marginal yields. All of these things, I think, reduce their short-run sensitivity to monetary controls.

[4] First, those intermediaries which, like the sales finance companies, operate largely on borrowed funds can usually borrow in any of several markets. Hence all of their possible sources of supply must be tightened before they can be compelled to restrict their own operations. The markets in mortgages likewise draw funds from a number of different types of suppliers. Second, institutions like life insurance companies and pension funds have continuous large inflows of new capital funds—what Dr. O'Leary has called "contractual savings"—whose volume is almost completely insensitive to short-run fluctuations in national income. The inflow may cease to expand in a business recession, but it is slow to shrink, and in the next expansion may hence start off from a higher relative level than most other flows of business receipts—a type of ratchet effect. Since these institutions usually try to keep quite fully loaned up in the short run, they thus provide a source of steady upward push in the relevant security markets. Pressure by the monetary authorities may in due course induce them to be more selective, and perhaps to move to some extent into shorter commitments, but in the short run it can hardly reduce the total volume of their new placements by much, if by any. (Also see the last paragraph of the preceding footnote.)

[5] The Treasury's failure to engage in any large-scale refunding, despite these high prices, also greatly inflated the supply of short-term liquidity.

[6] The USSR, implacable enemy of democratic capitalism, has until now virtually guaranteed us against major depressions by ensuring that we would undertake a tremendous volume of defense and mutual-aid spending that was almost wholly immune to fluctuations in current business activity.

effect of the so-called "population gap," due to the missing children who were *not* born during the thirties. From this gap, given the generally strong demand for labor since 1946, stems much of the power of the labor unions in recent years to enforce repeated direct and indirect wage increases, without too great regard for increases in productivity or for current fluctuations in output. Another cost-push bias comes from the growing importance of the so-called "service industries," whose employees have increased nearly 50 per cent since 1945. Their wages, though usually not as high, are influenced powerfully by the increases in union wages, but their productivity is often almost static. Finally, the downward inflexibility of many types of costs, including contractual prices and public utility rates, is obvious, and the phenomena of "administered" prices, price-maintenance laws and practices, and the like have long been familiar. They offer a further element of resistance to downward price adjustments and reflect the growing substitution of other forms of competition for competition through price changes.

7. The behavior of the velocity of money (here taken as GNP divided by adjusted demand deposits plus outside currency) has been striking. Since 1945 this has represented, I think, the most serious of all the obstacles to effective central monetary control, at least in the short run. From 1919 to 1933, velocity behaved "normally," in the sense that it moved fairly closely with GNP, and until 1930 its central trend was fairly near to horizontal. But after 1933, when GNP recovered rapidly, velocity continued on balance to fall and fell until 1946. Then it began a quite steady rise, at a rate almost as rapid as GNP itself, and on balance rose much more rapidly than the money supply. Between 1946 and the third quarter of 1957, velocity rose some 67 per cent, the money supply only 26 per cent. More than two-thirds of the doubling of GNP between 1946 and 1957 was hence due, in the algebraic sense, to the increase in velocity, less than one-third to that in money.[7] It is also striking that ever since 1933, except during the war, the movements of velocity have been quite closely parallel to the movements in the government bond rate—which was not true in 1919-32.

I interpret these facts as meaning that at least since 1933 velocity has been primarily an inverse measure, like government bond yields, of the demand for liquidity and for close liquidity substitutes. The general relative demand for liquidity fell almost continuously after 1945, with brief exceptions in 1948-49 and in 1953-54.[8] Investors,

[7] Indeed, from the postwar low of 1947 to the third quarter of 1957, even estimated real GNP increased nearly twice as much in percentage terms as did the money stock.

[8] More accurately, the demand schedule moved down and to the left. The 1948-49 recession shows up in bond yields, of course, but not in the (annual) velocity series. The general demand for liquidity is in turn, of course, one (inverse) reflection of the general state of expectations.

especially the financial intermediaries, sought to move out of government securities into more remunerative if riskier assets, and also out of cash.[9] Moreover, after 1945 it appears to have been broadly true that whenever the money supply increased less rapidly than before, velocity usually increased more rapidly. Conversely, when the rate of supply of new money increased, the rise in velocity usually slowed down or stopped.[10] This is simply another way of saying that, with the exceptions noted, the over-all pressure of general demand was so great that the private financial and monetary system always found ways to escape from money-supply and interest-rate restraints—like pushing in successive corners of a sofa cushion.[11]

The difficulty which this sort of thing poses for the monetary authorities is obvious and great. The rise in velocity presumably has some upper limit (though it is still nearly 20 per cent below the 1929 peak). As long as the economy can respond to restraint on the money supply by increasing velocity, however, there is likely to be trouble. To paraphrase Dr. Gurley's expression (see his comments, below), the harder the Federal Reserve tries to lean into the wind the harder, at least for a time, the wind apparently blows. To stop the rise in velocity, it may be necessary to tighten the general pressures so much as to produce a drastic collapse in expectations, and then the cure may be as bad as the disease.[12]

III

I want next to examine the record since 1945 from a somewhat different point of view: to define what seem to me to be the three central problems always facing any financial system like ours, and to appraise the adequacy of our present tools for dealing with these problems.

[9] Liquidity desires are expressed both by the size of holdings of cash relative to other assets and by the proportions and market prices of other types of assets, of varying degrees of liquidity, which are held. With any one current state of "objective facts," liquidity demands reflect both the general and the specific expectations of the asset holder. These relations are complex and are not usually the same for any two different types of investors, but cannot be explored here. Nor can the reasons for the differences between the apparent pattern of velocity in 1919-33 and that since 1945. Our empirical knowledge in these fields is still woefully deficient.

[10] But if we try this hypothesis of inverse relations, it seems to work best with a lag up to a year of changes in V behind those in M. Using annual data, and in percentage terms, in 1946-50 M rose only 4; but in 1947-51, V rose 34. In 1950-53, M rose 13, but in 1951-54, V rose only 1. In 1953-56, M rose 8, while in 1954-57 (third quarter), V rose 14. The 1948-49 recession produced a fall in M but not in V; the 1953-54 recession, the opposite. Also see Dr. Gurley's comments, below, on marginal V.

[11] Both on institutional innovations to escape monetary restraint and on the notion of velocity-curve shifts, see the study by Hyman P. Minsky (*Q.J.E.*, May, 1957). I am also indebted to Professor S. W. Rousseas for letting me examine the preliminary results of his statistical study of the relations among velocity, the Treasury bill rate, various long rates and GNP. Using quarterly data, he finds empirical evidence of a shift to the right in the velocity curve (velocity plotted against the rates) as between 1951-53 and 1956-57: in the latter period, velocity was higher at each rate. The "transition" took place in 1954.

[12] Compare the similar conclusion—which can hardly claim to be new—recently expressed with especial clarity by W. L. Smith (*loc. cit.*).

One, which needs only to be mentioned, is co-ordination of the central government's finances with monetary policy. It is obvious that the over-all impact of the post-1945 federal budget—and at least until 1951 of Treasury interest-rate and debt-management policy—has been inflationary. Even had our fiscal policies been in some sense completely neutral, however, two enormous and complex problems would have remained. These are the problems which, as it seems to me, lie at the very heart of monetary and financial policy. They are of two sorts.

First, in our present economy the general pattern is clearly one of over-all growth, at an average rate which despite fluctuations is quite substantial, and which since 1933 has been fairly well sustained. But from time to time certain sectors of the economy have "escaped," as it were, from the general average pattern, and for substantial periods have grown at rates far ahead of the national average. In the twenties, the automobile and related industries, the stock market, and the boom in Florida real estate were conspicuous examples. In the period since 1945, residential construction, the growth of the nonbank financial intermediaries, the growth of noncorporate mortgage financing and of consumer credit, in shorter bursts the output of various types of producers' durable equipment, and again automobiles, are all likewise examples. Most of these "escapes" are eminently desirable in themselves. They reflect the adoption of technological, financial, or organizational innovations or the satisfying of long-pent demands or other laudable developments. They are probably not only an inevitable concomitant of economic progress under capitalism, but are actually a necessary condition for such progress—certainly so in a Schumpeterian system. But they place a severe contemporary burden on the monetary and financial control machinery. In the short run, they are often destabilizing and inflationary, yet any control measures which are strong enough to deal with them and which are not selective may also do severe damage to other sectors that have remained on a more nearly even keel.

The other type of problem is more complex but much more important in the long run. In our type of financial system three things which logically and functionally are quite separate actually get inextricably mixed together and often conflict. One is the demand for and supply of money to carry on current payment transactions; one is the demand for and supply of additional real capital—of net new real investment—to carry on the process of growth; and the third is the demand for and supply of liquidity.[13] These three sets of factors interact and at times one or

[13] The importance of the liquidity demand for cash itself is obvious. Attempts to alter the relative quantities of other types of assets held, in order to change the holder's over-all noncash liquidity position, can also greatly affect the flow of funds into net new investment.

another may powerfully reinforce or powerfully thwart the rest. As examples of conflicts, an induced or an independent shrinkage in the money supply can interfere seriously with new investment and with the satisfaction of liquidity demands; an increased demand for liquidity may choke off the provision of new real capital for growth, and a capital-expansion boom may reduce liquidity below the minimum levels really desired and may even interfere with the supply of money used for other payment purposes, thus limiting the boom itself. The monetary system is at once the focus for a large part of these three sets of pressures and the arena for their expression.

If the economy is to be held steady in the near vicinity of some optimal long-term rate of growth, and without inflation, these three sets of forces must be kept approximately in balance with one another. That is the central task of monetary and financial control. Yet the only tools we now use in this field are limited.

One is direct control of the quantity of money itself and of the current supply of loanable funds, through open-market operations and changes in reserve requirements. The difficulty here, however, is the possibility and even likelihood of offsetting changes in money velocity, referred to earlier.

The second is control of the rate of interest. At present the only direct control we use is over the short rates, except for government-insured or guaranteed mortgages. I cannot enter here into the recent debates over how changes in the short rates make themselves felt and over the relation between such changes and the operations of the capital markets.[14] In the light of the factors listed in an earlier section that have made for instability and inflation; in the light of the fact that the response of long-term nonfederal security yields to changes in Treasury bill rates and in Federal Reserve discount rates has so often been slow and unreliable in recent years;[15] and finally in the light of the problem of what I have called "escaping" sectors of activity—in the light of all this, I retain considerable skepticism as to whether the short rates alone provide sufficient leverage to accomplish the desired results with sufficient promptness, yet without inducing excessive and damaging repercussions later if they finally take hold. They are also more effective in restraining an expansion, of course, than in starting a recovery.

Third, the demand for liquidity can be affected by a combination of induced changes in money supply, changes in interest rates, and moral suasion. This is likely to result, however, not only in movements along the relevant liquidity schedules but also in shifts of the schedules. But

[14] Among recent studies, see especially those by Roosa, Gurley and Shaw, Smith and Minsky, already referred to; and by W. H. White, J. M. Culbertson and J. H. Kareken.
[15] See footnotes 3 and 4, above.

the measures of deliberate monetary policy which bring about these changes, whether in the direction of contraction or of expansion, also produce changes in the general levels of investors' and borrowers' expectations; and these induced changes in expectations may in turn produce further endogenous changes in expectations. Indeed, a shift of liquidity schedules is one reflection of changes in expectations. The trouble here is that the general expectations held at any one time are usually, I think, rather "sticky" in the sense that it takes a substantial push to change them much. But once a change is started, the movement itself is likewise usually sticky—intractable if you will—in the sense that it is likely to continue for some time before a new stable level of expectations is established. To this must be added the effects of the well-known lags, between the occurrence of an event and the time when countervailing measures can take hold. The two together make it very difficult to prevent the induced change in expectations, and hence in liquidity demands, from going too far, especially on the down-side.

Finally, I doubt that measures of deliberate fiscal policy can adequately fill the gaps left by these other controls, even if the government's own budget is appropriately designed. The lag problem is here decisive. It is both technical and, what is more important, may also be political. The now-available types of fiscal measures can stop major depressions before they have gone very far, I think (though we have as yet no direct evidence in this country!), but they probably cannot prevent substantial recessions. This is true because they cannot be operated quickly enough in actual fact, whatever the theoretical possibilities. Nor do they seem to provide a very good bulwark against creeping inflation. The political pressures the other way are too severe.

All these various considerations, when taken together, make me quite dubious about the possibility of ever achieving, with our present controls alone, a combination which will both be effective in restraining destabilizing pressures, yet which will not also, from time to time, encourage or even force the economy to swing excessively and even disastrously far in the opposite direction. Indeed, it is really remarkable that our record since the war has been as good as it is.

IV

A National Monetary Commission (and I would add the word "financial") will probably wish to make a preliminary appraisal of all the major factors I have listed in earlier sections. But its main agenda, I venture to think, should begin with a determination of the broad objectives we want the economy as a whole to achieve. Presumably these include, and are perhaps confined to, the maintenance of an optimal

rate of growth, the avoidance of inflation[16] and instability, and the preservation of as much individual freedom as can be retained without an unbearable sacrifice of other goals. The problem of the possible mutual inconsistency of these objectives is obviously real, and its solution may be crucial, but it will not be explored here.[17]

Next, the commission should attempt to estimate the optimal long-run growth rate of the economy, just referred to, and hence the optimal rate of real new investment; and also the long-run supply of voluntary real savings. Then it should estimate, under selected assumptions about prices, the average rate of growth in the money stock which will be necessary to meet transaction demands, minimal liquidity demands, and any shortfall of voluntary savings below optimal investment. Next, it should try to reach conclusions on the complex problems of controlling those sectors of activity that from time to time "escape" from the general pattern, and of reducing or eliminating wide swings in liquidity demands.[18] This will involve it, among other things, in the much-debated question of the degree of elasticity of investment with respect to changes in the rate of interest and also of the sources of changes in expectations. Finally, it should consider the question, not touched on earlier, of our relations with other nations; that is, of the types of international monetary arrangements which we wish to maintain.

With all this in hand, the commission can then formulate its recommendations about monetary and financial policy and hence about the most appropriate type of monetary standard—always, of course, on the assumption that we are dealing with peacetime conditions and that the central government pursues appropriate rather than irresponsible fiscal policies.

The commission is likely to confront a choice among three main alternatives. The first is to abandon all or most of our present controls and to revert to extreme laissez faire. But in our present type of economy this course, it seems to me, would virtually guarantee wide fluctuations even if the quantity of money itself were somehow stabilized and is really not a practical alternative at all. The second is to retain

[16] Note that price stability is nowhere made an explicit major objective in our present legislation. Professor Slichter seems to accept the prospect of creeping inflation with resigned cheerfulness (*Harvard Bus. Rev.*, Sept.-Oct., 1957). I cannot concur in that view.

[17] The most obvious possible inconsistency is that between optimal growth and stable prices. This is serious only if real voluntary saving is substantially and persistently below optimal real investment, and if it hence becomes necessary to expand the money supply more rapidly than would otherwise be required. Since 1945, war repercussions apart, our problem has been creeping price inflation, not short-run fluctuations.

[18] But apart from wars, conditions abroad and political upheavals at home, liquidity demands in general should surely be stable if the economy itself grows at a stable and known rate which people believe will be maintained.

our present arrangements with little basic change.[19] Choosing this alternative, however, also seems to me likely to be unsatisfactory, on three grounds. First, for reasons already indicated, I think that the task of the Federal Reserve, in the present framework and with its present tools, is extremely difficult. It always faces a severe technical-lag problem, its direct leverage is limited even in the financial sphere, and it has no way at all of dealing quickly with inflationary wage pressures or with the so-called "escaping" sectors. Second, as also remarked earlier, I am doubtful that deliberate measures of fiscal policy actually can and will be put into operation, and can take hold, in time to prevent serious trouble. Third, the increase in power of the labor unions is clearly desirable in itself, despite the opportunities for abuse; and as Professor Slichter has recently pointed out, their effects on wages usually stimulate managerial efficiency. But if the unions do not themselves exercise restraint and if attempts are made to contain their wage drives by means of our present monetary and fiscal controls, we may well find ourselves forced into a type of struggle with which these controls are hopelessly inadequate to cope. This would not be merely a struggle over the size of the piece of pie. If policies of restraint become politically identified with the so-called "conservative" groups, and expansion and growth with labor, a major and ominous political conflict can result.[20]

The third alternative is to enlarge the present controls of the Federal Reserve by extending them into the capital markets in some form and even to set up something like a Federal Reserve for nonbank financial intermediaries—as Gurley and Shaw have suggested. If this be the course chosen, however, then I think other and more selective discretionary controls will also have to be made a permanent part of our system—for example, controls over the current volumes of residence construction, consumer credit, and security-trading margins; perhaps over corporate equipment outlays; and even over the rate of upward change in wage rates (though this last is clearly debatable on many grounds). If serious unemployment or inflation still developed from time to time, additional remedies could then be sought in measures of fiscal policy. Moreover, if this be the course chosen, then the policies and actions of all the agencies concerned—including the Treasury, the Federal Reserve, the Council of Economic Advisers, and any new bodies—should obviously be co-ordinated and should presumably be

[19] But with (1) cash in vault counted as part of the legal reserve; (2) differences in reserve requirements as among classes of banks, if retained at all, set up on some less irrational basis than the present one; (3) all commercial banks—that is, for this purpose, all those holding demand deposits—subject to Federal Reserve controls.

[20] Such as may now be impending in England. I am indebted to Professor Henry H. Villard for discussions of these latter questions.

directed by some new central agency, such as a National Economic Commission. In these areas, multiple sovereignty is becoming too costly a luxury. These are the directions toward which I suspect we may actually be heading at present. Such an increase in controls is instinctively repugnant to most of us, yet it may be the only way by which we can obtain both optimal real growth and also stability, on the average, in our price structure.[21]

The choice which the commission and the country face is thus basically a choice between greater stability and probably more rapid growth but with less individual economic freedom, on the one hand; and on the other, more freedom but less stability and probably much slower average growth. It is a difficult choice, and in the last analysis must be made not on economic but on political grounds. The commission can do an enormous public service, however, by developing the various specific alternatives clearly, showing the consequences of each, and thus powerfully helping the country to make informed and intelligent decisions.

[21] Under this alternative, the objective with respect to the money supply would be long-run growth at some stable rate consistent with the criteria outlined earlier, but with appropriate short-run fluctuations. With respect to the monetary standard itself, the present general type of arrangement seems satisfactory enough; but see the suggestions in an earlier footnote in this section. The possibility of improving its operation by adding secondary-reserve, liquidity-ratio or even some form of 100 per cent reserve requirements should also be explored further. The commodity-reserve notion does not seem to me practicable. On the international front, a country like ours should maintain exchange-rate stability if possible, but obviously not at the price of transmitting serious fluctuations originating abroad to the domestic economy, so far as such transmissions can be avoided. A return to the internal circulation of gold coins, which some still advocate, is surely unnecessary and might have pernicious destabilizing effects.

THE ROLE OF MONETARY POLICY

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Without detailed discussion of this complex question, it may be assumed that the objectives of monetary policy comprise some combination of a proper balance of payments, stability of an appropriate index of prices, and a high and growing level of production, employment, and real income. If the monetary authorities are successful in maintaining approximate stability of an appropriate index of prices, the task of achieving a high level of economic activity and a strong payment position will be facilitated.

The Behavior of Prices

In a free economy, the behavior of the economy as a whole and its constituent sectors will be reflected in and be affected by the movement of prices. So long as these price movements serve to guide production, distribution, and use of the national output in a manner consistent with the objectives of monetary policy, they are functional changes in prices. On the other hand, when prices rise or fall persistently and in a manner that defeats the objectives of monetary policy, such price movements are indicative of inflation or deflation—a functionless rise or fall in prices. While it is clear that changes in relative prices perform a function in shifting resources within the economy, it is not always apparent that a change in the price level is a necessary concomitant of a rapid increase in production.[1]

In every economy, there are fluctuations in consumption, investment, and government use of resources which are induced by real changes in demand—that is to say, independent of the creation of money. The economy will respond to such changes in demand with changes in output. Even if the supply of money remains the same, aggregate output will rise or fall and will be accompanied by a similar rise or fall in the price level. As it is assumed there is no increase in the supply of money,

[1] Some economists agree with the distinguished historian of prices, Thomas Tooke, that any rise in prices constitutes inflation. Tooke believed that prices would not rise, even under the extreme conditions of war, if the government would finance its expenditure out of taxes or through loans from the public. "It is perfectly demonstrable," he wrote, "that an expenditure by government, whether defrayed by immediate taxes to the whole amount, or by loan on the anticipation of taxes to be levied, is nothing but a change in the mode of laying out the same sum of money; and that what is expended by government would and must have been laid out by individuals upon objects of consumption, productive or unproductive." *A History of Prices and of the State of the Circulation,* Vol. I, pp. 92 ff. This argument is based on the assumption that without the creation of more money, there can be no increase in aggregate demand.

the production and absorption of a larger output at higher prices will be financed through an increase in velocity. Under these conditions, the rise in prices will be limited and it will come to an end as output approaches the desired level and the economy finds increasing difficulty in doing a larger amount of business with the same quantity of money.

To see the role of monetary policy, it may help to have some quantitative idea of the limit of a functional rise in prices during a cyclical expansion in business. In the United States, the experience has been that for each 2 to 3 per cent increase in industrial production there is likely to be a 1 per cent rise in wholesale prices. For example, between July, 1924, and June, 1925, industrial production rose by 20 per cent while wholesale prices rose by 9 per cent. Between March, 1936, and March, 1937, industrial production rose by 28 per cent while wholesale prices rose by 12 per cent. While similar relationships may be seen in the cyclical expansions after the war, they are complicated somewhat by the rising price trend of the postwar period.[2]

So long as there are cycles of investment and consumption, production will not grow at a steady pace, but will fluctuate with demand. When production can be increased significantly, a moderate rise in prices is functional, a means of acquiring the additional resources necessary for the increase in production.[3] When prices rise considerably without much increase in production, the price rise is inflationary, a reflection of the excess of aggregate demand. For example, between August, 1954, and December, 1955, industrial production increased by 17 per cent and wholesale prices of industrial products rose by 5 per cent—a functional rise in prices. By contrast, industrial production was virtually unchanged between January, 1956, and January, 1957, while wholesale prices of industrial products rose by 4 per cent—an inflationary rise in prices.[4]

[2] The monetary authorities need a number of tests of the limits of a functional rise in prices. The basic test, to be applied during the period of expansion, is that the rise in prices must not be excessive relative to the cyclical increase in output. This could be further refined by an analysis of the constituents of the price rise along the lines discussed in footnote 3. For example, a rise in raw materials prices has less significance than a rise in wage costs and profit margins. Beyond that, the rise in prices during the period of expansion should not exceed the decline in prices during the preceding period of contraction. With these limitations, the functional movement of prices in the United States would be cyclical in character and would not contribute to a secular rise in prices. It is assumed throughout this paper that a persistent rise in prices is indicative of inflation.

[3] A cyclical rise in prices is due to several factors, all related to the rapid expansion of output. First, it reflects higher prices for raw materials to induce increased production, larger releases from stocks, or a greater national share of world supply. Second, it reflects higher wage costs resulting from the tendency for wage increases to be concentrated in the period of industrial expansion. Third, it reflects higher profit margins because the increase in output lags behind the increase in demand.

[4] The results are essentially the same if the increase in the value of the gross national product is allocated between the part which reflects a rise in output and the part which reflects a rise in prices. Between the fourth quarter 1955 and the fourth quarter 1956 the gross national product increased by about 5 per cent. Three-fifths of the increase reflects the rise in prices.

Monetary policy must be concerned with preventing inflation without impeding the adjustment of production and prices which is constantly going on in the economy.[5] To be effective, monetary policy must be applied continuously to see that there is an appropriate quantity of money—enough, but not too much, to enable the economy to maintain a sustained rate of growth. It is not possible, of course, to determine at each moment of time what is precisely the appropriate amount of money. The actual problem is rather one of making small adjustments to provide approximately the amount of money the economy needs. Whether there is too much or too little money can best be seen from the level of production and employment, the rise or fall in prices, the state of the money and capital markets, and changes in imports, exports, and monetary reserves.

Maintaining Monetary Discipline

Because monetary policy must be made in this pragmatic way, its effectiveness depends upon keeping contiguity between the quantity of money and the economy's need for money. A large excess in the money supply should not be allowed to develop, because under such conditions the monetary authorities may be unaware of the magnitude of the inflation potential and unable to cope with it if the danger should emerge. The difficulties created for the monetary authorities when contiguity in the monetary system is broken can be seen from the recent experience of the United States.

The Great Depression was accompanied by a very considerable contraction in the money supply—from 26 billion dollars in June, 1929, to 19 billion in June, 1933. As part of the program to induce recovery, the money supply was expanded on a large scale—from 19 billion dollars in June, 1933, to over 45 billion in June, 1941. Accepting the desirability of an easy money policy in a period of protracted unemployment, it is nevertheless questionable whether such a large increase in the money supply can be significantly more effective than a more moderate one. Between June, 1941, and June, 1946, the money supply was further increased from 45 billion dollars to nearly 106 billion. Allowing for the large increase in the national product, it is clear that

[5] It should be noted that the tendency for consumer prices to rise relative to wholesale prices in recent years is primarily due to the fact that in almost all countries the rise in consumer prices has lagged far behind the rise in wholesale prices in the past twenty years. Thus, in the United States, in the last quarter of 1957, consumer prices were about 98 per cent above the 1937 level, while wholesale prices were 110 per cent above the same level. Much the same experience is found in Canada, the United Kingdom, Germany, France, Australia, and other countries. The lag in consumer prices is due to the fact that some of these prices are controlled (e.g., rents), regulated (utility services), or considerably affected by custom (personal services). The rise in consumer prices toward the secular relationship to wholesale prices should not be regarded as evidence of inflation if the wholesale price level of domestically produced industrial goods tends to be stable.

the divergence between the money supply and the need for money was considerably increased during the war.[6]

At the end of the war, private wealth was much too large in comparison with current and prospective personal incomes—the excess having arisen from the financing of the war by borrowing. At the same time, the allocation of the assets held by the public was unbalanced between money, fixed income assets, and real assets, including equities. It is interesting to consider what could have been done after the war to restore contiguity between the money supply and the economy's need for money. The yield on securities could have been made higher to induce the public to hold bonds instead of cash; and consumption and investment could have been held down through heavier personal and corporate income taxes. Actually, it was not feasible to reduce private wealth and the money supply to levels consistent with normal demand at constant prices. It would, however, have been possible for the monetary authorities to have imposed a more rigorous restraint on additions to the money supply in the past decade and thus have moderated the postwar rise in prices.[7]

Over the years, the supply of money has been gradually adjusted to the needs of the economy. This has come about not through a reduction of cash balances but through a steady rise in prices and output, interrupted for short periods by mild recessions. In 1946, the ratio of the gross national product to the money supply was 1.97. By 1956, this ratio was 3.12. As the value of the gross national product became larger, the ratio in 1957 rose to 3.26, well above the prewar figure.[8] Unfortunately, this does not prove that the money supply is no longer excessive. Cash balances equal to a given proportion of the value of the national product may be excessive in a period of full employment, rising prices and profits, and high interest rates, even though the public held the same ratio in cash balances without stimulating expansion in an earlier period of relatively low economic activity.

[6] One reason for this excessive expansion in the money supply was the decision of the government to finance the war at low interest cost. The yield on long-term government bonds during this period was less than 2.5 per cent. The yield on Treasury bills was pegged at ⅜ per cent.

[7] The United States was not alone in entering the postwar period with a latent inflation problem. The International Monetary Fund was very much concerned with the serious effects of the excess private wealth and liquidity on expenditure and prices. A number of papers were written on this question as early as 1947 and an article on "Latent Inflation" was published in *Staff Papers*, Vol. I, No. 1, February, 1950. The conclusions of this paper were stated in the following paragraph: "All things considered, there are no grounds for optimism in regard to latent inflation. It is difficult to believe that all or even most of the problem can or will be solved by wiping out or working off excess private wealth and liquidity. Expediency will probably dictate a compromise by gradually activating the latent inflation with slowly rising prices and wages." *Ibid.*, pp. 15-16.

[8] These velocity figures are computed by dividing the gross national product for the calendar year by the money supply of June 30 of the same year. The money supply is defined as demand deposits adjusted plus currency in circulation outside banks.

It is fashionable to speak of inflation as if it is now largely wage-induced and for this reason beyond the control of the monetary authorities. When prices are rising under the pressure of excessive expenditure, it is futile to expect labor to consent to a level of real wages below the economic value of the work on the grounds that such restraint will minimize the rate at which prices rise. Almost certainly, the rise in prices in the United States had its origin in the excessive liquidity which induced excessive expenditure, rising prices and profits, and provided a favorable environment for labor to demand wage increases and for employers to grant them. Once monetary discipline is restored, wage expectations are more likely to be consistent with monetary stability.

Instruments of Monetary Policy

The most important means used by commercial banks to acquire resources for increasing business loans is through the sale of investments, particularly government securities.[9] If the Federal Reserve banks are the buyers, the reserves of the banking system, as well as the resources of the selling bank, are increased by the proceeds of the sale of securities. If banks with excess reserves are the buyers, the reserves of the banking system are unchanged, the potential credit creation remains the same, but the actual credit created will be increased because of the transfer of reserves from nonlending to lending banks. If depositors are the buyers, the reserves of the banking system are unchanged, the actual credit created remains the same, but the velocity of the money supply will have been increased, since the cash balances will be transferred from holders to spenders.

The accord with the Treasury in March, 1951, recognized the importance of giving the Federal Reserve authorities greater flexibility in taking measures to avoid the continued accumulation of government securities and thus enabled them to restrain the expansion of bank credit. If the Federal Reserve System were compelled to support the price of government bonds, it would be deprived of its most important instrument of credit control—open-market operations. The initiative in increasing or decreasing the reserves of the banks through such operations is taken by the Federal Reserve System and the incidence of the

[9] The importance of the purchase and sale of securities by commercial banks as a means of investing excess funds or of acquiring resources for loans can be seen from the changes in such holdings between 1953 and 1957. With the decline in business, commercial bank holdings of government securites increased from 58.2 billion dollars at the end of May, 1953, to 70.2 billion at the end of October, 1954. With the expansion of business, commercial bank holdings of government securities decreased to 55.6 billion dollars at the end of September, 1957. These large changes indicate the importance of giving the Federal Reserve authorities the right to determine their purchases and sales of government securities with primary reference to the effect of such transactions on the monetary situation.

change in reserves is determined by the market.[10] The effect on the yield and prices of securities will facilitate adjustments in the bank loan rates and other interest rates to balance supply and demand.

The loans and advances of the Federal Reserve banks are part of the process of adjusting the reserves of the banking system, although in such operations, the initiative is always taken by the member banks.[11] As the additional credit that a bank extends to its customers yields more than the cost of the borrowed reserves, the effectiveness of the discount rate in restraining member bank borrowing depends upon the tradition that the amount of reserve credit to a member bank and its period of use should be limited. The psychological effect of changes in the discount rate may be far greater than their economic significance because such changes are made at infrequent intervals and can be dramatized as major steps in credit policy.[12] The response of the bond market to the recent reduction in the discount rate was due more to a change in expectations than to a change in basic market conditions.

The Federal Reserve System also has the power to raise and lower reserve requirements, thus acting directly on the excess reserves of the banking system. Such powers were used when large increases in reserves were brought about through the inflow of gold. They were also used when the government was a heavy borrower, aided by the credit operations of the monetary authorities. Under these conditions, the change in reserve requirements limits the secondary expansion of credit to business. Because they enable the monetary authorities to act promptly, without intervening in the market, variable reserve requirements can

[10] After 1952, when the market had become adjusted to the monetary accord, the open-market operations of the Federal Reserve System were not very large, the substitution of securities of different types being disregarded. The month-end holdings of government securities by the Federal Reserve banks rose from 23.8 billion dollars at the end of April, 1953, to 25.9 billion at the end of December, 1953, part of the increase being to meet seasonal needs. Thereafter, their holdings of government securities declined to 22.9 billion dollars at the end of June, 1957.

[11] The rediscounts and advances of the Federal Reserve banks tend to move in the opposite direction from their holdings of government securities. At the end of November, 1952, such credit to commercial banks amounted to 1.6 billion dollars. At the end of December, 1953, such credit had been reduced to about 100 million dollars. In the subsequent expansion of business, the rediscounts and advances of the Federal Reserve banks rose to about 1.0 billion dollars at the end of May, 1957. The practice of borrowing Federal Reserve funds, that is, the lending of reserves by banks with an excess to banks with a deficiency, at a cost not above the discount rate, has diminished to some extent the rediscounts and advances of the Federal Reserve banks. To maintain the discount rate above the yield on Treasury bills, so that it remains a penalty rate, the Federal Reserve banks raised the rate four times in 1955, twice in 1956, and once in 1957.

[12] The innovation introduced by the Bank of Canada of a fluctuating discount rate, adjusted weekly at ¼ per cent above the last preceding average tender rate for three-month Treasury bills, gives assurance that the discount rate, with rare exceptions and only for the briefest intervals, will be a penalty rate. This may enable the monetary authorities to emphasize that the rise and fall in interest rates are the result of changes in the market. It is doubtful whether the weekly adjustments add to the effectiveness of the discount rate as an instrument of monetary policy. The Bank of Canada exercises its control of bank credit primarily through open-market operations.

be useful in emergency situations. The incidence on different banks is too unequal to justify their use in ordinary circumstances.

The purpose of selective credit controls is to enable the monetary authorities to restrict credit in the inflated sectors without imposing an equivalent degree of restriction in other sectors of the economy. Many business borrowers have more than one purpose for which they use their own resources and borrowed funds. Such borrowers can avoid the controls by arbitrarily assigning their loans to the unselected rather than the selected fields of credit restriction. Selective credit controls are more successful, however, in restraining nonbusiness credit: consumer credit, mortgage credit, and stock market credit. To the extent that selective credit controls are effective, they lower the rate of interest at which the desired aggregate restriction of credit will be attained.

One consequence of reducing the availability of credit is a rise in interest rates. A high rate of interest will restrict the demand for credit because it raises gross investment cost relative to gross investment yield. As other important factors enter into computations of gross investment cost and gross investment yield, particularly the prospective behavior of prices and costs, the elasticity of demand for credit with respect to interest rates may not be high at certain times. Even so, if the rate of interest in the capital market rises above the level that is expected to prevail in the relatively near future, some borrowers may be induced to put off the issue of new securities, and the investment it would finance, until the interest rate has declined to a lower level.

The effectiveness of monetary policy requires the maintenance of contiguity of the money supply with the needs of the economy. When the money supply is excessive, the monetary authorities may be able to slow down inflation, but they cannot stop it; and once expectations of inflation have become widespread, the making of monetary policy becomes much more difficult. Under such conditions, the public may increase expenditure in anticipation of a further rise in prices; and borrowers may hasten their borrowing in anticipation of a further increase in interest rates. The response to monetary measures depends in large part on confidence that the monetary authorities will succeed in their objectives.

The Timing of Monetary Policy

A growing economy requires a growing money supply. In a monetary system in which banks hold fractional reserves, there must be a sufficient expansion of the monetary base to enable the banking system to provide additional bank credit. To the extent that the increase in the monetary base is not met by the accumulation of gold and foreign ex-

change reserves by the monetary authorities, it will have to be provided through the expansion of reserve credit. Because production grows unevenly, the addition to the money supply must be provided in such a way as not to intensify the fluctuations in production or the rise and fall of prices that accompany the business cycle.

Generally speaking, the induced changes in the money supply, initiated by the monetary authorities, do not have to be large. In a period of expansion, the banks will use their excess reserves to increase credit and business will economize the holding of cash. In time, however, the increase in output and the rise in prices and costs will create a need for additional money which the banking system may be unable to provide. If there is a balance-of-payments deficit, this will tend to reduce the money supply. Under ideal conditions, the capacity of the banking system to expand credit and of business to economize in the use of money will be exhausted when the increase in production has reached its cyclical peak and before there is an inflationary rise in prices.

The availability of bank credit should follow a cyclical pattern. At the beginning of recovery, the banking system should be able to create sufficient credit to encourage the expansion of investment and production. As the expansion proceeds, the monetary authorities may have to provide additional reserves to enable the economy to continue to respond to increased production. On the other hand, if easy credit is inducing an inflationary rise in prices, the monetary authorities may have to take active steps to reduce and not merely to restrict credit. After the period of expansion has come to an end and output declines and prices fall, the monetary authorities should once more begin to add to the monetary base in order to encourage recovery and to facilitate the next period of expansion in production.

Within this general cyclical pattern, there are difficult problems of timing. The inflationary rise in prices may begin in some sectors of the economy while there are still unused resources in others. If the monetary authorities could not restrain the expansion of credit until all the productive resources are employed, a very considerable inflation might emerge before the full employment objective is achieved. Although the failure to employ all the productive resources of the country implies some waste, it is also true that inflation involves waste through distortion in production, distribution, and use of the national product. While it is not desirable to choke off bank credit on the first signs of full employment in a few sectors, it is a mistake to tolerate inflation in order to offset the immobility of some productive resources.

When production begins to turn down, a rapid easing of credit could undoubtedly have some effect in prolonging the boom, although it is not clear how the monetary authorities can know whether the fall in

production is a pause in the expansion or the prelude to a recession.[13] The forces that induce cyclical fluctuations are not all monetary in character, although they are undoubtedly affected by monetary policy. It would be an exaggeration to say that a recession can be avoided merely through an easier credit policy. The change in credit policy from restriction to active ease should be for the purpose of facilitating the ensuing recovery rather than prolonging the boom. For this reason a change in policy is not called for at the first sign of the end of the boom, but only after the danger of inflation has passed.

It is not desirable to flood the economy with bank credit during a recession. If the money supply is increased too much in a period of unemployment, it may be necessary to contract credit during the recovery; and it is difficult for the monetary authorities to induce large contracyclical changes in the money supply. The better policy would be to time the additions to the money supply in a manner that facilitates recovery and expansion while avoiding inflation.

Control of Monetary Policy

In recent years, all governments have found it necessary to attach great importance to economic policy. The Employment Act of 1946 declares it to be the policy of the United States, subject to some qualification, to use all practical means "to promote maximum employment, production, and purchasing power." As monetary policy is one of the most important means of attaining the objectives of this Act, the administration and the Congress, as a practical matter, must assert their interest in monetary policy.[14]

The Great Depression and the postwar inflation have shown the

[13] The record on forecasting cyclical fluctuations is not an auspicious one, although excellent work has been done in this field. See, for example, *Statistical Indicators of Cyclical Revivals and Recessions* (Occasional Paper 31) (National Bureau of Economic Research, 1950). The inherent difficulty is that business cycles have large variations in their specific behavior. As Sidney S. Alexander points out in a forthcoming paper, "Rate of Change Approaches to Forecasting—Diffusion Indexes and First Differences," all recessions are preceded by a slowing down in the growth of production; but not every slowing down in the growth of production is followed by a recession. The Federal Reserve authorities should be able to improve somewhat on their timing of monetary policy, but it is futile to expect them to forecast business recession and unwise to require them to prevent any decline in business.

[14] The view that the Employment Act of 1946 hampers an effective monetary policy is not tenable. There is nothing in the Act inconsistent with the view that stability of prices is a proper objective of monetary policy. It is worth noting that in the twenties, Congressman Strong, of Kansas, introduced a bill to give greater emphasis to the stabilization of prices as an objective of monetary policy. The title of the bill indicates how comprehensive the objectives of monetary policy were to be: "A Bill to amend the act approved December 23, 1913, known as the Federal Reserve Act; to define certain policies toward which the powers of the Federal Reserve System shall be directed; to further promote the maintenance of a stable gold standard; to promote the stability of commerce, industry, agriculture and employment; and to assist in realizing a more stable purchasing power of the dollar, and for other purposes." The testimony on this bill is reported in *Stabilization Hearings* (Government Printing Office, 1929).

limits of what can be done with monetary policy. To say that there are limits to its effectiveness, however, is not to say that it can be neglected. A sound monetary policy is an essential part of a comprehensive program to encourage economic growth and the best use of the productive resources of the country. An intelligent monetary policy cannot be directed to lesser objectives, such as cheap financing of the public debt. At the same time, it is impossible to make intelligent monetary policy without considering the present and prospective level of production and employment, the state of the budget, the amount of public expenditure and taxes, and the management of the public debt. Unless the government itself pursues appropriate policies, the monetary authorities cannot make monetary policy effective.

When the problems that confront the economy are mild fluctuations of a cyclical character, monetary policy is likely to be adequate for preventing the emergence of inflation or deflation. A tight money policy, exerted with greater pressure as the expansion begins to manifest itself in a rise of prices rather than an increase of production, will generally be sufficient to stop the inflation. And an easy money policy, designed to provide adequate credit to enable the economy to undertake more investment after a period of contraction, will generally be sufficient to encourage recovery. The contracyclical behavior of government finance and the social security system will add somewhat to the effectiveness of monetary policy.

On the other hand, if an excessive aggregate demand is being fed by government expenditure and financed by bank credit, it is futile to think that the monetary authorities can hold the inflation in check by restricting credit to business. The only way to stop the inflation may be to increase taxes, reduce the government's spending, and limit its reliance on bank credit. Similarly, if the decline in aggregate demand has proceeded very far, the monetary authorities can do little to induce an expansion of investment through easy credit and low interest rates. Instead, it will be necessary to increase government expenditure until consumption and investment have recovered enough to make the economy responsive to such monetary measures. To insist that monetary policy is the concern solely of the monetary authorities is to imply that monetary policy is always capable by itself of dealing with the problems of inflation and deflation.

There is no necessary conflict between an administration striving to maintain high levels of production and employment and the monetary authorities striving to maintain monetary stability. The essential point is to have good working relations between the Federal Reserve System, the Treasury, and the Council of Economic Advisers. It is not reprehensible for the Treasury and the Council of Economic Advisers to

express their opinions on the measures that should be taken by the monetary authorities.[15] Having heard these views, it would be expected that the Federal Reserve would proceed with a monetary policy which in its judgment would be suited to the economic situation. To say that the Federal Reserve should give full weight to the views of the administration is in no sense to make it subordinate to any other agency of the government.

[15] Nor is there any good reason why the Board of Governors of the Federal Reserve System should hesitate to express its opinion on the fiscal policy of the government and its management of the public debt.

DISCUSSION

A. N. McLeod: Our discussion is more concerned with asking the right questions than with trying to assemble definitive answers, and therefore I shall not attempt what I suppose is normally the proper role of a discussant; namely, to promote fruitful debate on unresolved issues. Perhaps my most useful contribution would be to draw your attention to some recent experiments in Canada that might help in setting up a good agenda for a monetary commission anywhere. Indeed, that may well be the main justification for inviting a Canadian economist to this platform.

Messrs. Stein, Angell, and Bernstein have brought out very well what are, I believe, today's four principal monetary problems:

1. The liquidity of the banking system and of the general public after a long period of easy money, which greatly reduced the effectiveness of monetary policy until a good deal of the liquidity was squeezed out—or, as Mr. Bernstein puts it, the problem of contiguity of the money supply.

2. Conflicts or partial conflicts between the various economic objectives that monetary policy is now expected to promote. Mr. Stein refers particularly to conflicts between debt management and price stability, but conflicts between prices and exchange rates are also familiar (the external versus the internal value of the currency), and undoubtedly the most important question in this area today is the compatibility of stable prices and full employment. We expect monetary policy to regulate more things than ever before, and to keep fluctuations in them within much narrower limits than ever before.

3. The uneven impact of monetary policy on various sectors and regions of the economy, or more generally (as Mr. Stein puts it), the problems that relate to the proper allocation of capital. Parenthetically, I should like to say that I think it would be worth while experimenting with the possibility of regional variations in monetary policy. The federated nature of the central banking system in the United States should lend itself to such an attempt. There would obviously be serious difficulties, but in principle it ought to be possible to permit loans to be obtained more readily if a major portion of the first round of the expenditures would impinge on the underemployed resources of a relatively depressed region.

4. The need for further study and understanding of the role of nonbank financial intermediaries in the process of credit expansion, to which Messrs. Stein and Angell devote considerable thought.

These same problems have bothered us in Canada, too, and I believe it can fairly be said that the Bank of Canada has shown commendable imagination and initiative in going outside the traditional procedures in search of answers to these very difficult problems. I shall first proceed, therefore, to list what I consider the more important of the Bank of Canada's recent experiments in monetary techniques, and then add a few comments of a more general nature. The first two items go back to the early postwar years, but I shall be

primarily concerned with developments during the boom of the past two or three years.

1. In 1946, the banks were persuaded to accept an agreement whereby their holdings of federal government securities, other than Treasury bills, deposit certificates, and Treasury notes, would not average more than 90 per cent of their personal savings deposits. (Note that Canadian banking legislation does not distinguish sharply between demand and time deposits; personal savings deposits are subject to withdrawal by check even though they bear interest, and they account for about 60 per cent of all chartered bank deposits.) They also agreed that their earnings on these bonds would not exceed the cost of operating their savings business by more than a moderate profit margin—this was a period in which bank profits were under political attack in Canada as elsewhere, and in which a low interest rate philosophy prevailed. The agreement was ultimately terminated in 1952. While in effect it produced some curious distortions of the security market as the banks strove to keep their bond yields below the agreed limit.

2. On two occasions—in 1948 and again in 1951—the banks were persuaded to stop temporarily granting term loans.

3. As 1955 drew to a close, the Bank of Canada requested three things of the chartered banks. The first was to revive the ban on term loans, but this time to consider it a permanent measure; the banks agreed, with some qualifications. The second was to limit the lines of credit available to finance companies, loan companies, and merchants selling on credit; this also was accepted. The third request, and undoubtedly the most important of the three, was that the banks should agree to maintain a minimum of 15 per cent of their deposits in specified liquid assets; once more the banks acceded, though with some reluctance.

The reason for the third request was that over the preceding months, while bond yields were rising, the banks had tended to run down their short-dated securities in order to expand their commercial loans rather than liquidate longer term securities and incur capital losses thereon. The ratio of these assets had fallen to about 12 per cent by this time, and the banks were asked to raise it to 15 per cent in a period of six months. The idea was that under like circumstances in the future the banks would have to sell off their longer term securities in order to expand loans, thus adding to the effectiveness of monetary policy in restraining the extension of bank credit and at the same time making the entire capital market more sensitive to monetary policy.

This raises the whole complex of questions relating to primary and secondary reserves, but particularly their function and their proper magnitude in a modern banking system. Historically, the recognition of the need for secondary reserves is probably as old as the origins of the fractional reserve system; i.e., as old as primary reserves of less than 100 per cent of deposit liabilities. In view of the differences in banking practices and business conditions from country to country, it is not surprising that the acid test of survival established different safe ratios in different countries. The branch banking system in Canada was evidently a factor in the establishment of relatively

low customary ratios; the pooling of branch reserves means that they are more effectively used.

Nowadays central banks provide liquidity to the banking system in times of crisis. Reserves do retain an important function as the means of meeting clearinghouse drains and unforeseen variations in depositors' demands for cash, but their principal function is as an instrument of central bank control over the resources of the commercial banks. For this purpose regional differences in reserve requirements, and even differences as between demand and time deposits, are a handicap because they reduce the precision of the central bank's quantitative control over bank credit. As Mr. Bernstein has observed, however, variations of the ratio over time may be of use for certain purposes, such as to sterilize an inflationary inflow of foreign exchange.

4. At various times the Bank of Canada held discussions with the governing bodies of the main stock exchanges, with the major installment finance companies, and with the major department and chain stores which sell on credit, with a view to limiting credit demands through these channels. The central bank has no statutory authority over any of these institutions. The results of these talks were not entirely to the satisfaction of the Bank of Canada in all cases, but it appears that some moderation of credit demands was brought about in this way.

5. On November 1, 1956, the Bank of Canada introduced a "floating" bank rate; that is, the bank rate is set each week at 0.25 percentage points above the average yield at the weekly Treasury bill tender. The purpose was to emphasize that interest rates were currently being set primarily by market conditions rather than by official action. An important disadvantage is that the central bank would now find it difficult to revert to the previous system, if it should become desirable to use a reduction in the rate as a signal of a moderation in its policies. In order to do so it would have to abandon not merely a particular rate but in fact the entire system of flexible rates; in principle that could always be done, but in practice it might be felt that it would be interpreted as a much stronger signal than circumstances warranted.

6. Effective February 27, 1957, the banks' holdings of Dominion and Provincial government securities were valued at amortized value rather than "not exceeding market value," as a result of changes made in regulations under the Bank Act. The reasons for this action by the authorities have never been officially announced, but one possibility may have been to add some further discouragement to bank selling of securities at a loss on depressed markets, thus re-enforcing tight money policies.

7. In the spring of 1957, the Bank of Canada approached the chartered banks with two proposals that were partly interrelated. First, they noted that bank mortgage loans under the National Housing Act were falling off, as were NHA loans generally, and asked the banks to grant 150 million dollars of these loans in 1957. (These are insured mortgage loans somewhat similar to FHA loans in the U.S.A.) The banks agreed to do so, with some qualifications. Second, while the first proposal was an *ad hoc* measure to deal with the then-evident decline in residential construction, the Bank of Canada indicated that it wanted to begin a permanent measure of segregation of banking

assets which would eventually identify all savings deposits with relatively long-term types of investment. This has not been agreed to and aroused considerable public opposition.

There may well be differences of opinion about whether monetary policy was the best available technique for influencing the level of residential construction, and of course some of the bank lending thus induced may have merely replaced other lending. Nevertheless, this experiment is important as an example of a flexible approach in which special measures were devised to meet a particular situation. I wish to return to this point in a moment.

The proposal for the segregation of savings banking from commercial banking raises a host of questions that have both theoretical and practical importance. I cannot begin to deal with them in the time available here. I should like to say categorically, however, that I believe the adoption of any such arrangement would be a retrograde step of the most serious nature and would greatly impair the working of Canada's financial institutions, because it would divide banking into artificial and rigid categories. The proper balancing of short-term and long-term capital demands, and the appropriate allocation of bank credit between them, may vary considerably from one period to another and cannot be satisfactorily dealt with on an a priori basis. Canada's own recent experience has shown that in ten short years the problem of bank credit allocation can shift from limitation of the volume of long-term investments, through discouragement of the rate at which they were being reduced, to the positive encouragement of increased holdings; and that within this process the emphasis at one point may be on making the entire capital market more responsive to monetary policy, at another on insulating important sectors of the capital market from the influence of monetary policy. It ought to be recognized as an advantage, and not a disadvantage, that the activities of Canadian banks encompass the administration of liquid funds that are outside the direct reach of the monetary authorities in other countries.

Indeed this criticism can be generalized in respect of the Bank of Canada's actions since the end of the war: It has tended to devise new general rules to deal with particular problems in a rapidly changing situation, and these general rules have tended to produce distortions in the operation of the financial system. It would be better to rely more on *ad hoc* measures until it becomes quite clear that permanent measures are needed.

More generally it will be observed that most of the Bank of Canada's innovations in adapting the techniques of monetary policy to present-day conditions have involved selective or qualitative credit controls of one kind or another. It is perhaps regrettable that the great virtue of monetary policy over available alternatives—namely, that it operates at the most general level and hence interferes to a minimum extent with the market mechanism—should thus be compromised to some extent. Yet I believe we must try to meet the challenge to reduce progressively the amplitude of our economic fluctuations, and to eliminate or minimize the distortions inherent therein. That includes reconciling or eliminating the potential conflicts between the various objectives of monetary policy and of economic policies in general. For this reason I agree with Messrs. Angell and Bernstein that we must

inevitably accept further extensions of selective credit control, and indeed I think we must seek imaginatively after still other devices to supplement monetary policy. It is worth noting that the selective credit control devices used so far in Canada have with some exceptions been of a quite general nature, dealing with broad categories of bank assets and not attempting to determine the end uses of credit in fine detail. At this level of generality selective credit controls are less subject to criticism and evasion.

There are many other interesting questions raised explicitly or implicitly in the three papers, but there is just one on which I wish to add something here.

The need for co-ordination between fiscal and monetary policies at the level of broad strategy has long been recognized and all speakers have referred to it in one way or another, but the revival of monetary policy in the postwar era has brought into prominence some new aspects that relate to detailed strategy. The terms of reference of the commission ought to be sufficiently wide to enable it to examine these problems.

One of these aspects relates to the corporation tax, which is now established at very high rates for peacetime. The case against double taxation should be re-examined in the light of accumulated experience, but particular attention should be paid the implications for monetary policy. The corporate tax structure greatly reduces whatever deterrent effect high interest rates may have on the corporate borrower, since about half the interest cost is in effect deductible from taxes, and it contributes to the uneven impact of monetary policy on the capital market. In Canada, where local governments are not allowed to issue tax-free bonds, it puts these governments at a disadvantage in floating issues on the capital market. Allowing local governments to issue tax-exempt securities is not a satisfactory answer either, for it induces still other distortions and creates privileged positions. The anomalous position of the local government borrower vis-à-vis the corporate borrower may not have been too important when interest rates were low, but it becomes very important as interest rates rise.

It would also be worth while to re-examine the basis on which interest income from securities is taxed. For reasons of administrative simplicity, the tax is commonly based on the coupon rate rather than on the actual yield. This is probably not too important when interest rates are relatively low and stable. When rates are relatively high, however, or when they fluctuate considerably in response to monetary policy changes over the business cycle, this tax procedure introduces anomalies and distortions in the capital market.

JOHN G. GURLEY: As a nation we have been upset about our monetary system for over a hundred and fifty years. Some even get violent about it. I know of a man right now who would like to shoot every single member of the Board of Governors of the Federal Reserve System. Others with more placid natures set up monetary commissions. The rest of the population, it seems, testifies.

This continual worrying about money has had, and still has, a fairly solid foundation. But the source of the worries has shifted over time as financial

development has solved one problem only to reveal others. In the beginning there may have been money, but it wasn't very good money. In those years—starting in colonial days and running well into the nineteenth century—a good deal of the fuss was over the means of achieving a more efficient payments mechanism; that is, a supply of paper money that would be uniform and widely acceptable and that would maintain parity of value with other forms of money. This issue was over the quality of money, and it was largely settled in the National Bank Acts.

The second phase, which began before the first was completed, produced worries about the quantity of money—especially about the means of controlling this quantity. At first the concern was over the supply of paper money only, but in time this was extended to cover demand deposits as well. The Federal Reserve Act and the legislation of the thirties did much to take care of this problem.

It is apparent when one looks over the list of questions posed by Mr. Stein and the problems discussed by Professor Angell that we have moved into a third phase: a period of concern over the velocity of money. I should note, however, that this concern is not reflected at all in Mr. Bernstein's paper; and Mr. Stein, though willing to raise numerous problems, seems quite skeptical about the validity of many of them. Nevertheless, the problems that have been discussed are by and large problems of velocity, and there is a good reason for this.

Consider what has happened in the past two years—from mid-1955 to mid-1957. In that period, GNP in current prices rose by about 50 billion dollars, with price increases accounting for roughly half of this figure, while the money supply (demand deposits adjusted plus currency outside of banks) increased by only 3.3 billion. Thus, the marginal velocity of money—the change in money GNP divided by the change in the money supply—was at the astounding level of 15. If one compares the percentage increase of velocity with that of the money supply over this period, it is found that the former was four times more powerful than the latter in accounting for the rise in money GNP. It has recently been shown that in this sense velocity has had the upper hand in each of the short cycles of the past decade. While we have been concentrating on M, V has fluctuated markedly.

There are three main channels through which income velocity may rise during a period of monetary restraint. First, the holders of the existing money supply may spend it faster directly into the output markets. Second, some moneyholders may purchase primary securities (bonds, stocks, mortgages, etc.) from other individuals and businesses that wish to increase their purchases of current output. Third, others may purchase the obligations of nonbank financial intermediaries that in turn purchase the primary securities from those individuals and businesses desiring to step up their purchases of current output. When velocity speeds up through the second and third channels, the mass of financial assets grows much faster relative to the growth of money than it otherwise would.

One might argue that even if velocity does increase, the monetary authorities need only apply additional restraints on the growth of the money supply to

stabilize expenditures on current output. In fact, the Federal Reserve has attempted this in the past decade to such an extent that the money supply has risen by only 18 per cent, which was far below the 85 per cent rise in GNP, while the obligations of life insurance companies, mutual savings banks, and savings and loan associations have increased by 118 per cent—not to mention the phenomenal growth rates of other intermediaries. These events have raised many questions about the adequacy of present monetary controls. One question, however, that has received little attention is whether, under these circumstances, commercial banks are able to attract capital in an amount that sustains their ability to participate vigorously in the risky frontiers of economic growth. They might gradually, due to lack of adequate capital, seek to hold safer and safer assets as they become less viable, a situation which at the same time would invite further "propping up" of the banking system by subsidies in various forms. If this is a problem, it arises not only from the types of controls we now have but also from the present structure of the banking industry—a private enterprise industry which is profit-seeking, which is strictly controlled, which cannot be entered freely, but which is not a public utility with a guaranteed rate of return on capital.

Aside from this, as Mr. Stein noted, the leash on banking growth might discriminate against those especially dependent on this form of financing and favor those who can more easily obtain funds through the three channels just mentioned. Because security markets are not perfect, controls which restrain one financial institution without directly touching the others are bound to give us a pattern of growth that is different from what it would be under another set of controls.

These and many other problems arise even when velocity is independent of the money supply. But our present monetary controls may be still less efficient, as Professor Angell and Mr. Stein pointed out, if it is true that additional restraints on the growth of the money supply cause velocity to rise. The hypothesis is that the more we lean against the wind the harder it blows. Many arguments have been advanced in recent years, especially by Professor Warren Smith, in support of this hypothesis. I would like to add one more to the list. During periods of tight money, the rise in interest rates on primary securities enables nonbank financial intermediaries to raise the rates that they pay on their own obligations relative to the controlled rates paid by commercial banks on deposits. This shifts funds from commercial banks to nonbank intermediaries, without necessarily reducing the assets of the banking system, and so may serve to raise velocity.

For all these reasons and more, controls over the money supply may be less than satisfactory within our present financial structure. Both the structure and the controls, and the relation of one to the other, should be examined thoroughly by the monetary commission.

IS ANOTHER MAJOR BUSINESS CONTRACTION LIKELY?

THE MONEY ECONOMY AND BUSINESS CONTRACTIONS

By Asher Achinstein
Library of Congress

Among the few well-founded generalizations of human behavior derived from the history of business cycles is that long periods of prosperity generate widespread optimism and periods of prolonged business contraction are dominated by a pessimistic psychology. There is plenty of evidence that economists have not been free from the influence of these psychological waves in appraisals of the business outlook, in the assumptions underlying long-range projections, and even in the formulation of their theoretical models.

One manifestation of the general optimistic phase is the popular use of the "softer" expressions when referring to business downturns, such as rolling readjustment and business recession, rather than of terms with more ominous overtones like business contraction or depression. Moreover, the longer prosperity lasted, anyone referring to major business contractions was increasingly regarded as among those unfortunates who had never recovered from the stagnationist philosophy of the thirties as propounded, let us say, by Keynes, Hansen, or Schumpeter, or as among those who had fallen so far behind the times as not to have discovered with Sumner Slichter that the business cycle was largely a thing of the past. In recent months the signs have been multiplying that we have reached a turning point in the optimistic phase of the psychological wave that has accompanied almost two decades of more or less continuous business expansion. The very title of this session is good evidence that such a change has taken place.

As I understand my assignment, I am to consider whether in the future a business contraction substantially greater than, let us say, the kind we experienced in 1953-54, is likely in view of the contracyclical tools that have become available and the structural changes that have taken place in the economy since 1929. While there is no specific time-reference to this assignment, I need hardly add that there are definite implications to be drawn from this paper with respect to the level of business activity in 1958.

Cyclical Fluctuations and Economic Organization

In one sense, the question posed by the title of this session is an easy one to answer. On the basis of the past behavior of the economy, the

statistical odds are that in the future we are likely to experience a business contraction that is steeper than either of the two that has occurred since the second World War, or of longer duration, or both. This disagreeable answer is based neither on a mechanistic view of historical development nor upon a lack of appreciation of the progress we have made in attempts to control those economic instabilities that play such havoc with human welfare. It is based on the assumption that the problems we have to deal with are deep-seated and, with all our efforts, we have yet to learn how to deal adequately with them. The business cycle has been with us a long time whereas most of the measures for promoting stability on which we now rely date only since the Great Depression of the thirties. Moreover, since then matters have been further complicated by hot and cold wars and perhaps by some institutional changes in recent decades which may even aggravate instability.

The problems are deep-seated because cyclical fluctuations are rooted in our economic organization which operates in terms of a pecuniary logic as well as through industrial and technical processes. In the money economy, producers and consumers are caught-up in a network of price and financial relationships which have a powerful influence on the cumulative processes generated during business expansions and contractions and which have frequently determined whether contractions are mild or severe. Among the highly significant factors responsible for such steep declines as took place in 1920-21, 1929-33, and 1937-38 were: the speculative inventory and price developments in the expansion phase of the first post-World War I cycle; the speculative character of real estate and stock market credit and of foreign loans in the twenties, together with the rapid expansion of consumer credit; and the unusually sharp rise of inventories in 1937, as well as the inability of financial institutions to make funds available to a prostrate construction industry because their portfolios were still bulging with an inheritance of sour mortgages and foreclosed properties from the twenties.

Minor and Major Cycles

In evaluating the influence of structural changes and the efficacy of tools to minimize instability it is necessary to refer, however briefly, to the distinction in the literature between minor and major cycles. The former is usually associated with inventory readjustments and the latter with fluctuations in the producer durable goods industries and in construction. I believe it is not incorrect to assert that most business cycle theorists who emphasize the importance of the distinction appear to assume that different sets of causal factors are at play in minor and major cycles. There is no doubt that the cycles since World War I

which were not mentioned in the previous paragraph and which manifested mild contractions in 1923-24, 1926-27, 1948-49, and 1953-54, mainly involved inventory readjustments. But this does not tell us whether the excessive accumulation of stocks originated only in sectors that supposedly have no influence on the course of the major cycle, or in sectors which supposedly do influence it. Certainly minor contractions usually also exhibit varying degrees of slackening in the durable goods and construction industries that are presumed to be "strategic" in the behavior of the long cycle.

The differentiation between minor and major cycles with a view to establishing different causal factors appears to run into difficulties when the attempt is made to apply the two-cycle hypothesis to the cyclical fluctuations of the past—let alone the much greater difficulties in employing the hypothesis for appraisals of current business conditions. Professor R. A. Gordon, who has devoted a good deal of attention to the study of individual cycles since World War I, finds it necessary to speak of "hybrid" cycles with characteristics common to minor and major cycles, and also of "incomplete" major cycles with expansion phases that do not have a chance to culminate in major contractions.

In part, the difficulties, I believe, arise from three commitments: first, an analytic framework based on a fairly sharp separation between short- and long-term expectations which is then applied to historical experience on the assumption that short-term expectations dominate minor cycles and long-term expectations determine major cycles; second, a strong emphasis on the notion of a "stock" of investment opportunities which becomes exhausted for a considerable period because of the behavior of innovation and other exogenous technological factors; and third, on the realization, moreover, that both short and long cycles are influenced by other elements of a monetary and financial character which do not fit in neatly either with the analytical formulation or with the classification of historical cycles.

Despite the ambiguities involved in tagging individual cycles, the attempt to treat several succeeding minor cycles as a unit of the expansion phase of a major cycle followed by a severe and long contraction phase during which minor cycles are absent can be a fruitful operational procedure. This approach has been used mainly by business cycle theorists who regard innovations and "real" new investment as the dynamic factors and consumption as the passive element. But this approach may be even more fruitful if greater emphasis is placed on the role of the consumer and of the financial institutions which influence the variability of his demand.

In considering the variability of consumer spending, I have in mind consumer durable goods and residential construction. The latter is

treated in our national accounting systems under the category of investment, and there are many who argue that consumer durables should be similarly handled. But I hold with those who find it more illuminating to view them both under the category of consumption, since, among other reasons, the motivations and influences that affect family decisions to purchase these goods are quite different from those which govern the investment decisions of business firms. These two sectors of the economy played a powerful role in the expansion phase of the major cycle in the twenties and during the period since World War II. They contributed greatly to the deep and prolonged contraction of the thirties. Their behavior may also determine to a considerable extent whether the late fifties will experience a substantial business decline. Since World War II consumer expenditures for durable goods and housing have been nearly half again as large as business expenditures for plant and equipment. Moreover, their rate of growth has greatly stimulated outlays for commercial construction, plant and equipment, and expenditures for community facilities and services by state and local governments.

The Construction Cycle

There is a large measure of agreement among investigators of cyclical fluctuations that the building industry in this country, and particularly residential construction, is characterized by long cycles with wide amplitudes and with a duration of about fifteen to twenty years. It is also noted that the more severe business contractions have taken place during the downward phase of the long construction cycle.

At the risk of sounding dogmatic because of brevity, I shall outline what appear to me to be the strategic variables that account for the long construction cycles of the past. The expansion phase of the long wave in new residential building is determined in large degree by the income factor, especially shifts in the distribution of income. The market for new housing falls within the middle and upper ranges of the income pyramid. The change in economic status which comes with a rise in family income is reflected before long in a determination to move into a new house and a new neighborhood. In this connection one can readily use the acceleration principle to account for the magnification of the upward movement in residential building. But a more realistic basis for the acceleration in the pace of construction is provided by the organization of the industry—the speculative character of real estate activity, the optimistic proclivities of the builder, and the readiness of financial institutions to pump funds into construction. In previous major cycles, as the history of urban communities shows, the satisfaction of a spurt in housing demand was bound up with con-

siderable land speculation in the outskirts of cities, especially after improvements in transportation facilities made new subdivisions feasible for development. Moreover, there is no industry which has been so dependent on outside sources for funds to carry out its operations; so that the mortgage market and the monetary influences affecting that market have been powerful influences determining the level of building.

Wars, of course, have also greatly stimulated postwar housing booms. This is not only due to the backlog resulting from the curtailment of residential construction during hostilities, but also because war increases migration of families, adds other members of the household to the ranks of labor, lifts many persons into higher income brackets, and increases liquid assets due in large part to reduced spending for durable goods whose production is curtailed during wartime.

As the housing boom goes on its merry way more or less ignoring several minor business recessions, land and building costs rise substantially and the supply of new dwellings in certain price ranges becomes excessive. Both the limitations of the income pyramid and the more cautious lending policies of financial institutions, who really call the tune so far as decisions to launch new projects are concerned, become increasingly effective in curtailing the level of new building.

Once the housing boom comes to an end, why is there such a deep and lengthy slump in building? Granting that there has been a saturation of the market, the long time it takes for the industry to recover can hardly be explained in terms of a surplus that must wait upon an increasing population to wipe it out. A more realistic account of the duration of the slump is the painful and long drawn-out process of downward revision of the overcapitalized properties and the other adjustments necessary to correct the excesses of the speculative real estate boom. Financial institutions which are at the center of this prolonged struggle for recapitalization—what with defaulted mortgages, the taking over of foreclosed properties, etc.—have no incentive to supply funds for new construction that is in direct competition with the large number of existing dwellings whose capital values have meanwhile been dropping to depression levels.

Whether or not one accepts an interpretation of past housing booms based on income changes, speculative activity, and monetary influences, and of protracted periods of residential building slumps in terms of a drawn-out struggle for revision of capitalizations, or, if you prefer, a struggle for liquidity, there is little doubt that a major business contraction is more likely in a period of declining building activity. Our construction statistics suffer from serious gaps and the data on housing starts probably understate the volume of completions during the past seven years, but if the yearly figures of starts adequately measure the

general direction, it appears that the peak of new dwellings may have been reached in 1950 and that the trend has been downward since then. This suggests that perhaps we have entered the contraction phase of another long residential building cycle. It is particularly important, therefore, to establish the extent to which the institutional changes which have occurred in this area since the mid-thirties are likely to moderate such a possible downward movement.

Structural Changes and Growth of Consumer Debt

The housing boom since World War II has not been characterized by the kind of speculative subdivision activity and reckless financing methods prevalent in the twenties, culminating in the collapse of the mortgage structure. Since the thirties, the mortgage market has become much less vulnerable due to the widespread use of the monthly amortized mortgage, the insurance and guarantee programs of the Federal Housing Administration and the Veterans' Administration, and because of the greater marketability of mortgages through the operations of the Federal National Mortgage Association. Furthermore, federal government insurance of deposits of commercial banks, savings banks, and of share accounts in savings and loan associations has also greatly strengthened the ability of the money economy to withstand the cumulative processes of a business contraction.

All of these institutional changes substantially lessen the possibility of a downturn becoming deeper and longer than any experienced during the past decade. However, there are other developments, partly an outgrowth of the same institutional changes. The housing boom has produced a spectacular rise in mortgage indebtedness, having been fed by easy credit terms—ever lower down payments and longer terms of maturity—in addition to the stimulus it received from the income and population factors. There are those who profess little concern about the record increase in the size of mortgage indebtedness. Easier credit terms have reduced the debt service to what amounts to rental payments under tenant occupancy—with the result that the growth of mortgage debt does not necessarily signify a particularly onerous burden on home owners. Unfortunately, we do not have any satisfactory measures of the debt burden on the consumer. Comparisons of aggregates over a period of years, based on total mortgage debt outstanding and disposable income, do not tell us very much about the relative burden of the debt. What would be illuminating would be more adequate data on actual monthly payments for different income groups.

The crucial question with respect to debt burden is, of course, the impact on borrowers and lenders when a business downturn occurs and there is a sizable drop in employment and incomes. The good record of

repayments and foreclosures during the recessions of 1949 and 1954 is encouraging, but this favorable condition took place when the building industry itself was an important factor in keeping the downturn mild and short. If the industry cannot be counted on to give the necessary push for an early business recovery because it is itself confronted by market and other conditions that limit its scale of operations, then the large volume of new dwellings financed in recent years on the basis of little or no downpayments, long maturities, and high debt-to-value ratios can create difficulties for mortgagors and mortgagees which would aggravate a business downturn. A large part of the mortgage debt is not protected by government insurance or guarantees. Moreover, as studies of the housing boom of the twenties indicate, the longer the boom continues the greater the deterioration of the quality of the credit, so that there are greater defaults and foreclosures on loans made during the latter part of the boom than on those made earlier. The institutional changes introduced since the thirties should enable the mortgage structure to adjust itself more readily to declining real estate values, increasing defaults, etc., and avoid making liquidity the overriding consideration with the customary adverse effects on the fortunes of the building industry. But there is still a time lag in the readjustment process—shorter though it may be—that could nevertheless result in a sizable curtailment of the volume of loans for new construction.

But what of the device of further easing of credit terms to give the necessary stimulus to residential building? Here the thought arises as to whether we have not come near to scraping the bottom of the barrel in the liberalization of terms under the FHA and VA programs. Then, too, there is a question whether these programs, which were so influential in directing the energies of the building industry toward providing single family projects in our suburbs, are as likely to be as successful as they were in the past. As a result of the great number of such dwellings constructed since the war, the roads to suburbia are frequently clogged with autos moving bumper to bumper and suitable sites for housing development are meanwhile becoming scarcer—a situation which is not likely to be eased before the sixties when our national highway program will have progressed much further. Moreover, although I have deliberately chosen to give the population factor a secondary role in the long construction cycle, it should be mentioned that the decline in household formation since 1950 may not be significantly reversed before the early sixties.

Like the mortgage debt, the debt for consumer durables has grown in the postwar period at a greatly accelerated rate and for the same reasons: the increase in incomes, the greater equalization of incomes,

and the progressive easing of terms. Maturities on automobile paper, for example, shifted from twelve months in the twenties to eighteen months by 1937, twenty-four months by 1952, and thirty-six months by 1955. We need not stop to consider the aggravating potentialities during a business downturn of the record increases in installment credit, since what was said about deterioration of credit and the debt burden in the housing area is also applicable to the durable goods field. Here, too, there are limits to which maturities can be further lengthened to stimulate demand.

Monetary Policy

With respect to the influence of the rapid growth of installment credit on economic stability, one cannot fail to note an important structural change that has taken place in this area over the past three decades. In the twenties, installment lending operations were virtually nonexistent so far as commercial banks were concerned. In recent years their installment business—the most profitable part of their lending operations—has exceeded that of any other financial institution, and it is estimated that, directly and indirectly, commercial banks have financed more than half of the total installment credit. It is difficult to see how this change can have failed to weaken the effectiveness of general monetary controls in restraining credit expansion by banks and by some of their strongest customers and most effective competitors—the sales finance companies.

Flexible monetary policy had been in eclipse for quite a long time before its revival in recent years. We are all aware of the mistaken monetary policies pursued in the late twenties and early thirties which contributed so much to the deepening of the depression. Certainly monetary authorities have learned many lessons since then, not the least important of which is that their actions must not aggravate cyclical fluctuations. Since steep and prolonged contractions have their origin in developments of the preceding boom, as well as in the kind of adjustments that are made in the early stages of the downturn, one must ask how efficacious has monetary policy been in restraining excessive expansion in the prosperity phase of the cycle? In this connection, the timing and vigor of action are important, as are the specific tools employed. No doubt the execution of monetary policy in the interest of economic stability is no easy matter. Part of the difficulty arises from lack of agreement as to what general credit policies are expected to accomplish. If there are differences in the views of economists on the objectives and efficacy of monetary tools, one should certainly view sympathetically the efforts of those in charge of monetary controls who have to steer a course amidst the "pressures" from bank-

ers and businessmen, committees of the Congress, and the Administration.

There are many who have expressed considerable satisfaction at the skill with which the Federal Reserve Board has employed flexible credit policies since, let us say, May, 1953. There can be no doubt that the 1.2 billion dollar increase in bank reserves through open-market operations between May and July, 1953, the reduction of reserve requirements in June, the lowering of the discount rate from 2 per cent in February, 1954, to 1½ per cent in May, and the further reduction in reserve requirements in June, created a condition of credit ease which speeded-up business recovery in 1954. The Chairman of the Federal Reserve Board has, in retrospect, expressed regret that the Board followed too liberal a policy in the first half of 1954. If a review of monetary actions in the recent past justifies any regrets, the failure to move more vigorously in early 1955 might be a more fitting basis for such feelings than the liberality of 1954. It is instructive to note that attention was called to the danger of excessive credit expansion early in 1955.

In this connection I should like to refer to an important difference between the twenties and the fifties; namely, the greater sophistication of the Congress on policy matters relating to economic stability. Since the Employment Act of 1946, the publications of the *Economic Reports of the President* and the hearings and publications of the Joint Economic Committee have had their influence on Capitol Hill. The monthly *Economic Indicators* and that most valuable compendium of statistical information provided by the Appendix to the *Economic Reports* are used intensively by committees and their staffs.

On March 3, 1955, the Senate Banking and Currency Committee started its three weeks of public hearings on the stock market. They were held at a time when there had been a continuous rise of stock prices for eighteen months, with Standard and Poor's Index of 480 common stocks rising by almost 60 per cent since September, 1953, and consumer installment indebtedness was moving forward toward the record rate of 2 billion dollars reached in the second quarter of the year. During the course of these hearings, which received wide public attention, a number of prominent witnesses emphasized that there was increasing evidence of unhealthy speculative activity in the stock market and an undesirable expansion of mortgage and installment credit. *The Economic Report of the President* issued about six weeks earlier also had already cautioned that "continued economic recovery must not be jeopardized by overemphasis on speculative activity" and that activities involving the discounting of a long future, as in the case

of home purchases or the pricing of corporate shares, might be carried to excess.

At the same time, there were other voices objecting to the effort to focus attention on the potentially dangerous developments in the field of credit. The Secretary of the Treasury, for example, emphasized instead the potential danger that any inquiry into the stock market might have on confidence. Such divergence of views must have made it more difficult for the monetary authorities to take vigorous action. In any event, the Reserve Board did not raise the discount rate until April, 1955, and then only from 1½ per cent to 1¾ per cent, and there was no attempt to change reserve requirements, which had been progressively lowered from 24 per cent in mid-1953 to 20 per cent in mid-1954. The monetary authorities exerted pressure on the reserves of commercial banks through open-market operations, but the banks found other ways to supply funds—through sale of their securities and borrowing from the Reserve banks—to meet the continued demands of business and consumers.

Durable Goods Sectors and Economic Stability

There can be little doubt that the great expansion of credit has been a major influence producing a "bunching" of expenditures on durable goods which is a potent force in aggravating instability. The production of 8 million cars in 1955 and a volume of housing starts which was close to the postwar peak reached in 1950, followed in the next year by a record rate of expansion in plant and equipment expenditures, resulted in great pressures on physical resources, a further rise in building costs, and in a growing shortage of loan funds that culminated in the highest level of interest rates in twenty-five years.

It has been frequently asserted in recent years that the economy has become more stable because business firms have come to rely increasingly upon long-range budgeting of capital expenditures and upon research outlays that tend to regularize the innovation process. Moreover, the consumer, accustomed to a higher standard of living, with greater determination to maintain that standard, more assured by larger liquid assets and by the knowledge that he is the beneficiary of public and private unemployment compensation and old age benefits, and that the greater power of unionism will hold the line on the price of labor, is more likely to maintain his customary expenditures. The strength of these structural changes in the face of the more persistent characteristics of the money economy has certainly not yet been tested. It would be folly, therefore, to minimize the fact that investment decisions are still governed by profit considerations, cost-price relation-

ships, and psychological influences, and that consumers are still likely to curtail spending when fixed commitments loom more burdensome with a decline in incomes and when employment prospects become dimmer. It is the postponability of durable goods, whether producer or consumer, which makes for more violent fluctuations, and that must still be reckoned with as a fundamental characteristic of our economy. If there is a marked decline in both of these sectors—due to an autonomous shift in consumer demand and to a temporary saturation of the stock of durable goods—the downward readjustment of incomes, prices, and capital values becomes more drawn out and the stimuli for expansion in other sectors of the private economy become weaker. To be sure, such a contraction will be cushioned by the automatic stabilizers, the higher floor provided by the size of government expenditures and by the improvements introduced into our financial structure in recent decades. We can also count much more on government determination to pursue monetary and fiscal policies to speed up recovery. But these tools are not likely to be adequate when the durable goods and construction industries show sizable contractions. If these conditions should prevail in the near future, then a decline substantially greater than any we have had in the postwar period is likely.

One final word. In a period when we are beginning to adjust our thinking to the presence of the sputniks, expansion of our military programs may counteract contractionary tendencies. At the same time, we are beginning to recognize that we may be unable to meet our problems without some fundamental reassessment of our values—a reassessment which may not leave untouched those standards of consumption which have dominated our economy in the postwar era.

POSTWAR CYCLICAL EXPERIENCE AND ECONOMIC STABILITY*

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Twelve years unmarked by serious economic contraction have elapsed since the end of World War II. The impressive postwar record of growth and resistance to depression is partly responsible for the widespread tendency to emphasize aspects of recent experience which are believed to be new or abnormal and are thought to have contributed importantly to economic stability. The structural changes of the past twenty-five years, it is asserted, have so altered the response mechanism of the economy that wide swings are a thing of the past. At the other pole is the argument that postwar prosperity has been due to war or cold war influences which are not only autonomous but abnormal in their persistence for nearly two decades. If either of these explanations is correct, it has obvious implications for future stability. So also does a third possibility; namely, that although the postwar economy differs from its predecessors in details of structure and the mixture of autonomous factors at work, there has been no essential change in the nature or causes of business fluctuations.

I am not prepared to make a categorical choice among these alternatives, although I lean toward the last. One of my purposes in this paper is to show why I find the choice to be difficult, and why certain inferences which are sometimes drawn from observable characteristics of recent fluctuations appear to me to be quite inconclusive. The other purpose is to call to mind a few of the important autonomous forces which are known to have affected business cycles in the past and to stress their influence in the postwar era.

The Postwar Cycles in Historical Perspective

An obvious first question is whether the postwar business fluctuations have differed so much from those of earlier years that one is almost forced to conclude that abnormal external factors or decisive structural changes must be the cause of contemporary behavior.

The long-run development of production in the United States reveals striking gains, but growth has been far from steady (Chart I). Since the absence of a major contraction is a distinctive feature of the postwar era, the most comparable intervals with regard to stability and

* This paper presents some early results from a study of the growth and stability of the postwar economy which I am undertaking for the Brookings Institution.

continuity of growth lie between the severe contractions of the past. Among the latter may be ranked the contractions of 1873-78, 1882-85, 1892-94, 1907-08, 1920-21, 1929-32, and 1937-38.[1] The contraction of 1944-46, while large in terms of production, was mild insofar as the development of unemployment or excess capacity is concerned.

It is apparent that the postwar period is not in a class by itself in its freedom from depression. Beginning with the segment of 1866-73, the intervals between severe contractions before World War II measured respectively 7, 4, 7, 13, 12, 8 and 5 years, while the postwar experience has spanned 12 years thus far.[2] If the comparatively mild though long-lived contraction of 1882-85 is excluded from the class of major contractions, moreover, the two short periods which are second and third on the foregoing list would be replaced by a single interval of 14 years.

The duration of the contemporary period, on the other hand, becomes 19 years if it is extended to include World War II. The vital question, however, is whether by virtue of structural changes or abnormal forces the economy has been inherently more stable in the postwar years. The influence of World War II and its aftereffects cannot be neglected in either of these connections, but the fact remains that the relevant period for study and comparison begins in 1946 rather than 1938, and to this period we now return.

It is somewhat surprising to discover that the average annual rate of increase of production has been smaller in the postwar years than in the comparison periods (Table 1). Some of the earlier periods, however, began with recoveries from deep troughs in which surplus capacity had developed on a large scale, permitting rapid advances until the slack was eliminated. Allowance should be made for this fact, since the present period did not begin from a position of underutilization.

A correction for the capacity factor can be made by selecting periods of approximately equal labor force utilization. Estimates of the percentage of the labor force which was unemployed during the various comparison periods are shown in Table 2. By this important criterion, the economy has fared well in the postwar years, and indeed better than in any period covered by the unemployment data with the exception of 1900-1907. The average unemployment ratio for the twenties, however, is raised by the high rates of 1921 and 1922. If those years of

[1] The dates are from the business cycle chronology of the National Bureau of Economic Research. They do not necessarily agree with the peaks and troughs of the corresponding contractions in the production series included in Chart I, although the disagreements are few.

[2] The first segment dates from the end of the Civil War even though no severe contraction occurred at that time.

TABLE 1

AVERAGE ANNUAL PERCENTAGE RATES OF INCREASE OF PRODUCTION, SELECTED PERIODS, 1866–1956*

PERIOD	MANUFACTURING PRODUCTION (1899=100)	GROSS NATIONAL PRODUCT (1947 Dollars)	
		Total	Per Capita
1. 1866–73	6.0		
2. 1878–92	5.7		
a) 1878–82	13.2		
b) 1885–92	6.7		
3. 1894–1907	7.1	4.7†	2.8†
4. 1908–20	5.5	4.2	2.5
5. 1921–29	6.3	4.8	3.3
6. 1932–37	15.7	8.2	7.5
7. 1938–44	24.2	11.8	10.7
8. 1946–56	4.8	4.0	2.2

* Percentage growth rate computed from an exponential curve fitted to the annual data by the use of Glover's mean value table (J. W. Glover, *Tables of Applied Mathematics*, George Wahr, Ann Arbor, Michigan, 1923, pages 468 ff.).

† Computed for the period 1897–1907.

SOURCES: Index of manufacturing production:

1860–99. Edwin Frickey, *Production in the United States 1860–1914* (Harvard University Press, 1947), Table 6.

1900–1937. Solomon Fabricant, *The Output of Manufacturing Industries 1899–1937* (National Bureau of Economic Research, 1940), Table 1.

1938–56. *Economic Report of the President* (January, 1957), Table E-27. Converted to 1899=100.

Gross national product:

1897–1928. Raymond W. Goldsmith, *A Study of Saving in the United States*, Vol. III (Princeton University Press, 1956), Table N-2. The series was adjusted to the level of the Department of Commerce estimate for 1929 and converted to 1947 dollars.

1929–56. The Department of Commerce estimates as given in *Economic Report of the President* (January, 1957), Table E-4.

Population:

1897–1928. *Historical Statistics of the United States 1789–1945* (U. S. Bureau of the Census, 1949), page 26.

1929–56. *Economic Report of the President* (January, 1957), Table E-14.

initial expansion are disregarded, the resulting average for 1923-29 is about equal to 1946-56.

Here, then, are two periods—1900-1907 and 1923-29—during which over-all resource utilization was comparable to present times. Computing production growth rates for these periods, we find that it is still true that growth was slower in recent years than around the turn of the century (Table 3). Contemporary growth has been more rapid than in the middle and late twenties, however, although the excess can scarcely be considered a difference in kind.

So much for the growth of physical activity during the postwar period as a whole. Let us now take a closer look at the two post-World War II business cycles and see how they compare in amplitude and duration with their predecessors (Table 4). Both postwar expansions

TABLE 2

UNEMPLOYMENT AS A PERCENTAGE OF THE CIVILIAN LABOR FORCE, AVERAGES FOR SELECTED PERIODS, 1900–1956

Period	Average Unemployment Ratio
1. 1900–1907	2.9
2. 1908–20	5.4
3. 1921–29	5.1
4. 1932–37	20.2
5. 1938–44	9.8
6. 1946–56	3.9

SOURCES: 1900–1928. Stanley Lebergott, "Annual Estimates of Unemployment in the United States, 1900–1954," *The Measurement and Behavior of Unemployment*, A Conference of the Universities—National Bureau Committee for Economic Research (Princeton University Press, 1957), page 215.
1929–56. *Economic Report of the President* (January, 1957), Table E-17.

were considerably longer than the average of previous upswings, though they were not the longest on record. Similarly, the postwar contractions were briefer than the average, but there were several earlier downswings of approximately equal duration. With regard to amplitudes, the first postwar upswing was among a number of mild expansions on record, while the second was about average. The downswings of 1948-49 and 1953-54 had amplitudes below the average for all prior contractions but well within the range of previous minor recessions. The postwar fluctuations are clearly similar with respect to amplitude and duration to a number of their forerunners. The differences between them and earlier cycles are no greater than the differences among earlier cycles.

Thus far, three major aspects of postwar economic performance have been set against the perspective of history. The postwar record has been good on all three counts of freedom from severe contraction, maintenance of high-level employment, and rapid growth of production. It is not unique in any of these respects or in the combination of them, however. It is not until we turn to the behavior of prices that a pronounced contrast with earlier events is found, and even then it is

TABLE 3

AVERAGE ANNUAL UNEMPLOYMENT PERCENTAGE AND AVERAGE ANNUAL RATE OF GROWTH OF PRODUCTION, SELECTED PERIODS, 1900–1956*

Period	Average Unemployment Percentage	Average Annual Percentage Increase of		
		Manufacturing Production	Gross National Product (1947 Dollars)	
			Total	Per Capita
1. 1900–1907	2.9	6.6	4.4	2.4
2. 1923–29	3.8	4.2	3.1	1.6
3. 1946–56	3.9	4.8	4.0	2.2

* For sources and methods, see Tables 1 and 2.

TABLE 4

DURATION AND AMPLITUDE OF BUSINESS CYCLES, 1854–1954

Expansions				Contractions			
Business Cycle		Duration (Months)	Amplitude (Per Cent)	Business Cycle		Duration (Months)	Amplitude (Per Cent)
Trough	Peak			Peak	Trough		
Dec. 1854	June 1857	30	12.3	June 1857	Dec. 1858	18	21.0
Dec. 1858	Oct. 1860	22	16.8	Oct. 1860	June 1861	8	14.1
June 1861	Apr. 1865	46	18.1	Apr. 1865	Dec. 1867	32	11.4
Dec. 1867	June 1869	18	6.9	June 1869	Dec. 1870	18	7.9
Dec. 1870	Oct. 1873	34	18.4	Oct. 1873	Mar. 1879	65	26.9
Mar. 1879	Mar. 1882	36	27.6	Mar. 1882	May 1885	38	27.9
May 1885	Mar. 1887	22	22.7	Mar. 1887	Apr. 1888	13	11.2
Apr. 1888	July 1890	27	16.6	July 1890	May 1891	10	17.0
May 1891	Jan. 1893	20	16.3	Jan. 1893	June 1894	17	30.7
June 1894	Dec. 1895	18	25.3	Dec. 1895	June 1897	18	24.3
June 1897	June 1899	24	26.6	June 1899	Dec. 1900	18	14.4
Dec. 1900	Sept. 1902	21	14.2	Sept. 1902	Aug. 1904	23	14.4
Aug. 1904	May 1907	33	20.2	May 1907	June 1908	13	29.5
June 1908	Jan. 1910	19	25.6	Jan. 1910	Jan. 1912	24	12.0
Jan. 1912	Jan. 1913	12	13.6	Jan. 1913	Dec. 1914	23	23.2
Dec. 1914	Aug. 1918	44	29.8	Aug. 1918	Apr. 1919	8	22.0
Apr. 1919	Jan. 1920	9	17.9	Jan. 1920	July 1921	18	34.7
July 1921	May 1923	22	38.0	May 1923	July 1924	14	21.8
July 1924	Oct. 1926	27	17.8	Oct. 1926	Nov. 1927	13	9.3
Nov. 1927	June 1929	19	16.7	June 1929	Mar. 1933	45	75.1
Mar. 1933	May 1937	50	63.7	May 1937	June 1938	13	45.4
June 1938	Feb. 1945	80	72.7	Feb. 1945	Oct. 1945	8	41.0
Oct. 1945	Nov. 1948	37	14.7	Nov. 1948	Oct. 1949	11	17.5
Oct. 1949	July 1953	45	23.9	July 1953	Aug. 1954	13	14.3

SOURCE: National Bureau of Economic Research.

NOTES: The amplitudes are averages of three trend-adjusted indexes of business activity: AT&T, Persons-Barrons, and Ayres. Before 1879, the entries are for the Ayres index alone. The amplitudes for each index are based upon the specific cycles in the index. The method by which specific cycle amplitudes are computed is explained in Arthur F. Burns and Wesley C. Mitchell, *Measuring Business Cycles* (National Bureau of Economic Research, 1947), Chapter 2.

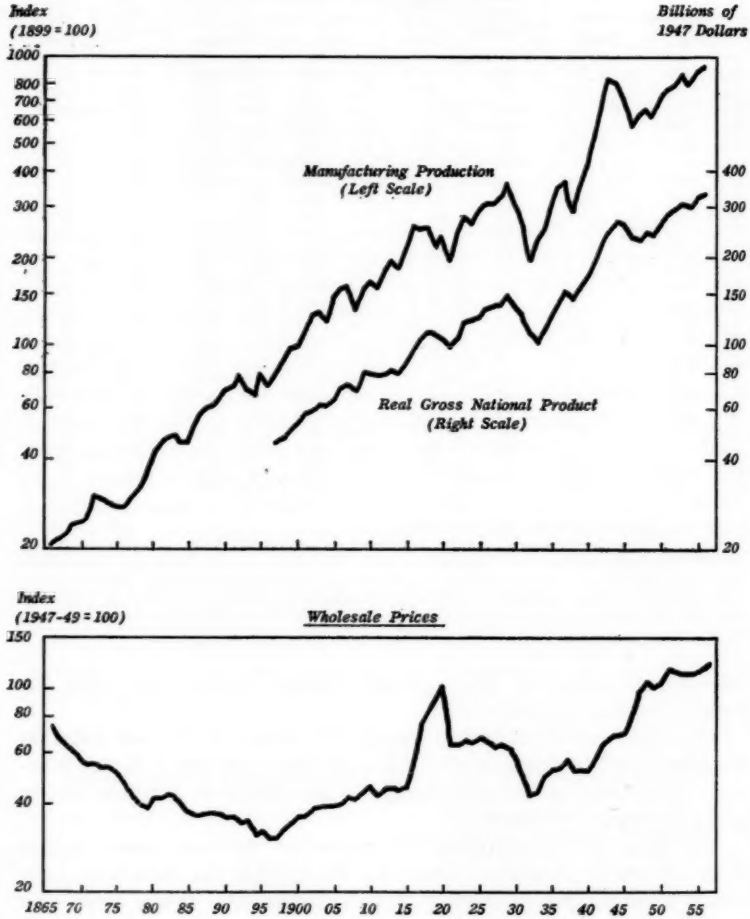
with developments in other postwar decades rather than with the entirety of previous experience.

To judge from the historical record, the absence of postwar deflation is an outstanding characteristic of the contemporary era. It is not, however, evidence that a basic change in the nature of business cycles has necessarily occurred.

The long-term development of production has been more regular than the course of prices (Chart I). Production has risen with only minor setbacks except during major contractions. Prices have also declined during severe contractions, but for the rest, they have sometimes increased, sometimes decreased, and sometimes remained virtually unchanged during business cycles (Table 5). Since a variety of price tendencies have been compatible with production tendencies which are similar to those of the postwar years, it cannot be concluded

CHART I

MANUFACTURING PRODUCTION, REAL GROSS NATIONAL PRODUCT, AND WHOLESALE PRICES, 1866-1956



For sources and notes see Tables 1 and 5

TABLE 5

AMPLITUDE OF WHOLESALE PRICES DURING BUSINESS CYCLES, 1834–1954
(In Per Cent)*

Expansions				Contractions			
Business Cycle		Amplitude		Business Cycle		Amplitude	
Trough	Peak	Total	Per Year	Peak	Trough	Total	Per Year
1834	1836	27.5	13.8	1836	1838	− 5.0	− 2.5
1838	1839	5.2	5.2	1839	1843	−26.0	− 6.5
1843	1845	1.2	0.6	1845	1846	3.4	3.4
1846	1847	0.2	0.2	1847	1848	− 4.7	− 4.7
1848	1853	7.5	1.5	1853	1855	3.7	1.8
1855	1856	0	0	1856	1858	−10.0	− 5.0
1858	1860	− 1.7	− 0.8	1860	1861	0.5	0.5
1861	1864	89.4	29.8	1864	1867	− 9.5	− 3.2
1867	1869	−10.8	− 5.4	1869	1870	− 7.4	− 7.4
1870	1873	− 3.4	− 1.1	1873	1878	−26.3	− 5.3
1878	1882	7.2	1.8	1882	1885	−14.4	− 4.8
1885	1887	− 0.3	− 0.2	1887	1888	1.6	1.6
1888	1890	− 2.1	− 1.0	1890	1891	− 0.5	− 0.5
1891	1892	− 6.6	− 6.6	1892	1894	− 8.3	− 4.2
1894	1895	1.9	1.9	1895	1896	− 4.7	− 4.7
1896	1899	12.3	4.1	1899	1900	7.7	7.7
1900	1903	6.0	2.0	1903	1904	0.3	0.3
1904	1907	9.3	3.1	1907	1908	− 3.5	− 3.5
1908	1910	12.0	6.0	1910	1911	− 7.9	− 7.9
1911	1913	7.6	3.8	1913	1914	− 2.4	− 2.4
1914	1918	92.6	23.2	1918	1919	5.6	5.6
1919	1920	11.3	11.3	1920	1921	−36.8	−36.8
1921	1923	3.2	1.6	1923	1924	− 2.4	− 2.4
1924	1926	1.9	1.0	1926	1927	− 4.6	− 4.6
1927	1929	− 0.2	− 0.1	1929	1932	−32.0	−10.7
1932	1937	33.3	6.7	1937	1938	− 8.9	− 8.9
1938	1944	32.3	5.4	1944	1946	16.4	8.2
1946	1948	32.7	16.4	1948	1949	− 5.0	− 5.0
1949	1953	11.0	2.8	1953	1954	0.2	0.2

* The business cycle dates are from the chronology of the National Bureau of Economic Research. The percentage changes during expansions are computed from trough to peak and those during contractions, from peak to trough.

SOURCE: Index of wholesale prices (1947–49 equals 100) is from a mimeographed release of the Bureau of Labor Statistics.

that recent price behavior is prima facie evidence that business cycles have changed.[3]

What is the proper interpretation to place upon the finding that in a number of important performance characteristics the post-World War II business fluctuations fall within the range of their predecessors?

[3] This is not to say that the characteristics of cycles are unrelated to price trends. Prices trended irregularly downward from the end of the Civil War until the late 1890's, and during that span several prolonged contractions occurred. Prices subsequently followed a rising trend through World War I, and there were no contractions during that period which were both extended and deep. Burns and Mitchell found evidence that contractions tend to be long or short according as the trend of prices is rising or falling (*Measuring Business Cycles*, National Bureau of Economic Research, 1947, pp. 431–440). They express confidence, on the other hand, that the business cycles occurring during upswings of long waves in commodity prices do not differ substantially from the cycles during the long downswings of prices.

Pronounced contrasts between recent and earlier behavior would be consistent with the hypothesis that business cycles now differ because of abnormal autonomous factors or of structural changes that altered the response mechanism, or some combination of the two. The fact that such differences do not exist does not disprove the hypothesis, however. It is entirely possible for varying combinations of autonomous factors or for different economic structures to yield the same general outcome. The multiplicity of theories of the business cycle is in itself evidence of that, as is the stubborn persistence of the phenomenon in the real world. At the same time, one cannot be as confident that a fundamental change has occurred as he would be if contemporary experience were outside the previous range; and the mere fact that business cycles have persisted during a long history of institutional development and economic growth cautions against quick inferences that lasting structural changes are responsible for recent stability and will continue to induce stability in the future.

The Diffusion of Business Cycles

Contemporary observers have not overlooked an interesting feature of recent business fluctuations; that is, the tendency for offsetting movements to occur among the various sectors of the economy. Sustained declines of business fixed investment occurred during the contractions of 1948-49 and 1953-54, but residential construction and personal consumption led on both recoveries. The outbreak of Korean hostilities stimulated private as well as public demand, and the subsequent reaction to the early speculative buying diminished the pressure on resources just as an accelerated mobilization program was getting underway. After lagging behind homebuilding and consumption on the 1954 upturn, business fixed investment rose steeply as residential construction declined, and when business investment began to taper off in 1956, federal spending commenced to rise.

It is tempting to speculate that these tendencies are a reflection of new structural developments which have inhibited the transmission of inflationary or deflationary impulses from one sector to another, and there has been a fair amount of popular discussion of "rolling readjustments" and "the breakup of the business cycle." Propositions which might be advanced in support of the hypothesis include the following. The automatic stabilizers have reduced the value of the multiplier during expansions and by moderating the fall of disposable income in contractions, have fostered favorable conditions for autonomous upward shifts of the consumption function such as occurred during 1949 and 1954.[4] Business fixed investment is less responsive than formerly

[4] In this context, "automatic stabilizers" consist of any leakages which regularly mod-

to slowdowns or declines in sales, because businessmen are looking farther into the future and expect growth to continue, as evidenced by the increased use of capital budgeting techniques and long-term projections in the formation of investment programs. Financial reforms have strengthened the banking system and the capital markets, inhibiting speculative tendencies and mitigating the threat of secondary deflation.

The list could be lengthened, but to little purpose since I am not prepared at this time to assess the significance of individual structural changes. I will therefore confine myself to an indirect approach to the problem, by again asking whether the phenomenon is a new one requiring a new explanation.

The answer, of course, is that it is not, which will surprise few students of business cycles and none who has stressed the importance of disaggregation. Even on a broad aggregative level, there are similar instances of counterbalancing movements during earlier cycles. Residential construction reached a peak of the long building cycle in 1925, which means that it rose during part or all of the contractions of 1920-21 and 1923-24, but fell during the expansion of 1927-29. Professor Kuznets' estimates of annual consumption expenditures in 1929 prices show increases during the contractions of 1923-24 and 1926-27.[5]

These illustrations are drawn, of course, from the minor fluctuations of the twenties. But that is just the point. Let us accept the working hypothesis that the contractions of 1948-49 and 1953-54 were mild because they were not widely diffused. If a similar relationship between amplitude and diffusion is to be found during the mild contractions of the middle twenties, contemporary experience can hardly be cited as proof of a basic change in the response mechanism.

That a similar relationship did exist during the earlier contractions is shown, not only by the aggregative data already mentioned, but also by the diffusion index graphed in Chart II. This index measures the percentage of manufacturing and mining industries in which production increased each month. A high value means that few industries were curtailing production in that month, whereas a low figure means that few were expanding. Obviously, we have here a ready summary of

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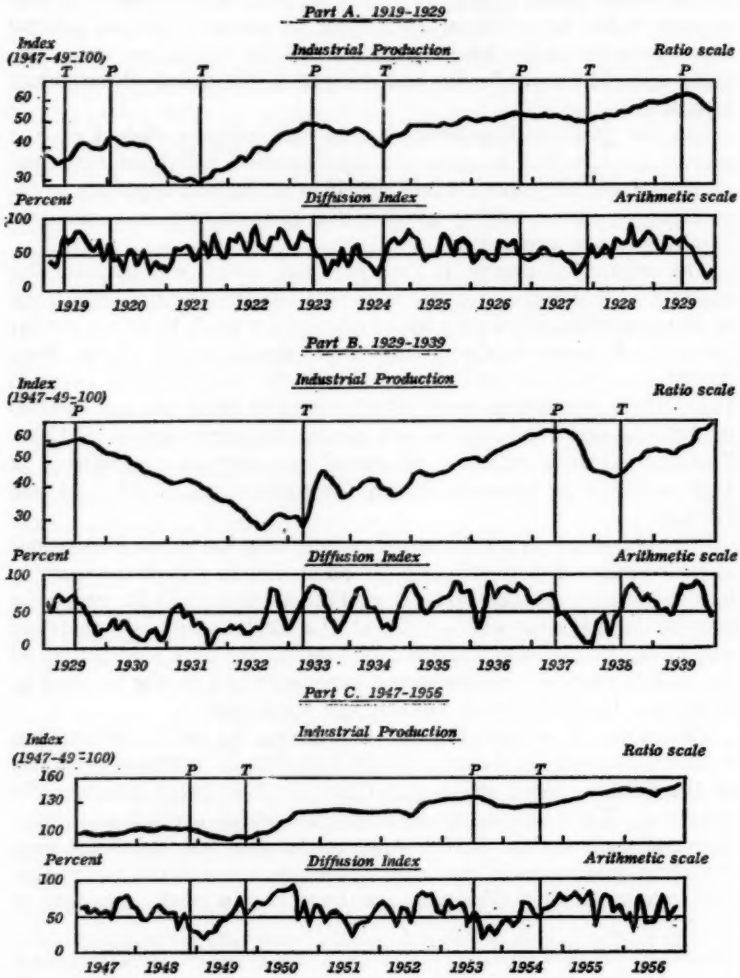
erate the marginal response of disposable income to GNP, including induced changes in business saving. There is evidence, however, that the over-all response has been diminished in the postwar period because of the augmented importance of taxes and transfers. See my paper, "Federal Spending and the Stability of the Postwar Economy," *Federal Expenditure Policy for Economic Growth and Stability, Papers Submitted by Panelists Appearing Before the Subcommittee on Fiscal Policy* (Joint Economic Committee, 85th Congress, 1st Session, November 5, 1957), which contains a comparison with the twenties. It should also be noted that tax cuts helped to raise disposable income in 1954.

[5] Simon Kuznets, *National Product Since 1869* (National Bureau of Economic Research, 1946), Table I 15.

CHART II

Industrial Production and Its Diffusion, 1919-39 and 1947-56



Vertical lines indicate business cycle peaks and troughs as dated by the National Bureau of Economic Research.

For sources and notes see Table 6.

TABLE 6

AMPLITUDE AND DIFFUSION OF INDUSTRIAL PRODUCTION DURING BUSINESS CYCLES, 1919–39 AND 1947–56
(In Per Cent)

Expansions*					Contractions*				
Trough	Peak	Amplitude†		Average Monthly Index of Diffusion‡	Peak	Trough	Amplitude†		Average Monthly Index of Diffusion‡
		Total	Per Month				Total	Per Month	
Mar. 1919	Feb. 1920	25.7	2.3	65.5	Feb. 1920	July 1921	−31.8	−1.9	45.3
July 1921	June 1923	63.3	2.8	67.4	June 1923	July 1924	−18.4	−1.4	42.3
July 1924	Oct. 1926	32.5	1.2	61.3	Oct. 1926	Nov. 1927	− 7.5	−0.6	44.9
Nov. 1927	Aug. 1929	24.5	1.2	66.1	Aug. 1929	July 1932	−54.1	−1.5	29.1
July 1932	May 1937	132.1	2.3	62.2	May 1937	May 1938	−33.8	−2.8	30.7
Oct. 1949	July 1953	45.7	1.0	59.9	Oct. 1948	Oct. 1949	−10.5	−0.9	39.9
					July 1953	Aug. 1954	−10.2	−0.8	42.3

* The peaks and troughs are those of the cycles in industrial production which correspond to business cycles as dated in Table 4.

† Amplitudes of expansions are measured from trough month to peak month and of those of contractions from peak month to trough month.

‡ Arithmetic mean of the diffusion index during the cyclical phase.

SOURCES: Index of industrial production:

1919–53. Federal Reserve Monthly Index of Industrial Production, *Federal Reserve Bulletin*, December, 1953, page 86. The index is adjusted for seasonal variation.

1954–56. *Federal Reserve Bulletin*, various issues.

Diffusion index of industrial production:

National Bureau of Economic Research, computed from seasonally adjusted components of the Federal Reserve Index of Industrial Production. The number of industries included was 15 from 1919 to mid-1923, 25 from then until 1939, and 26 beginning in 1947. The index measures the percentage of industries which increased production each month.

offsetting tendencies in production.[6] Comparison of the values shown in the chart and in Table 6 indicates clearly that the two recent contractions are in the same class as those of the mid-twenties with regard both to amplitude and diffusion.[7]

Autonomous Factors in the Postwar Cycles

Economists are generally agreed that severe contractions result from substantial declines of fixed investment. These may occur because the stock of investment opportunities becomes temporarily insufficient to maintain an adequate level of expenditure or because the desire to exploit the existing opportunities is impaired for a time by adverse

[6] The emphasis of the NBER on the importance of diffusion goes back, of course, to Wesley Mitchell. Some references to the literature will be found in my "An Experiment With Weighted Indexes of Cyclical Diffusion," *J. of Amer. Statis Asso.*, Mar., 1958, pp. 39-53. This experiment demonstrates that a simple diffusion index based only on the direction of change of each component differs little from indexes which are weighted by the size of the component industries or the amplitudes of the individual fluctuations. This finding removes a possible objection to the use of a diffusion index for the present purpose.

[7] It is of little importance in the present connection that the contraction of industrial production in 1920-21 apparently was deeper though not more widely diffused than the two which followed in the decade, but it is worth noting that the statistical bases of the indexes are weaker for the years prior to 1923, and that more comprehensive indexes show the expected correlation between diffusion and amplitude even in 1920-21. Cf. Arthur F. Burns, "New Facts on Business Cycles," *30th Annual Report of the National Bureau of Economic Research*, 1954, reprinted in the same author's *The Frontiers of Economic Knowledge* (Princeton University Press, 1954), pp. 107-134.

price or sales expectations, liquidity considerations, deterioration of business confidence, monetary or real capital shortages, etc.[8]

Following Professor Gordon, we may note several ways in which fixed investment opportunities are created: replacement requirements; demand for additional capacity induced by income growth with a given composition of output and given capital-output ratios; opportunities arising because a new composition of output becomes appropriate owing to the development of new products, changing tastes, divergent income elasticities, etc.; alterations in the composition of the capital stock made attractive by changes in technology or relative factor prices; and new opportunities in the field of housing stemming chiefly from population growth and migration. The crucial point to recognize is that investment opportunities may be created by factors which are to an important degree autonomous with respect to the level or rate of change of aggregate economic activity, even though the rate at which they are exploited may be modified by current and prospective short-term movements in sales, prices, profits, etc. This line of thought suggests that the postwar contractions have been mild, not alone because of structural changes in the cyclical response mechanism, but also because autonomous factors have helped to assure an adequate stock of investment opportunities. What might some of those factors be?

High on the list must be placed war and cold war. The second World War left as part of its heritage to the forties an abundance of investment opportunities and the psychological and financial conditions favorable to their implementation. The importance of federal expenditure in the present-day economy springs largely from security needs, and to the formerly paramount destabilizing potential of private investment must now be added that of government spending. As I have emphasized elsewhere,[9] largely for autonomous reasons federal expenditure has been the most variable major component of final demand in the postwar economy and has contributed much to such short-term instability as has occurred. Each retrenchment of federal spending, however, has left it higher than before; and over the decade as a whole it has been a broadly expansive force.

This last need not have been the case, of course. It is sometimes asserted that the new importance of government demand for output has placed a high floor under the economy. But if big government is

[8] Cf. Robert A. Gordon, "Investment Behavior and Business Cycles," *Rev. of Econ. and Statis.*, Feb., 1955, pp. 23-34, and also his "Types of Depression and Programs to Combat Them," *Policies to Combat Depression*, A Conference of the Universities—National Bureau Committee for Economic Research (Princeton University Press, 1956), pp. 7-25. Professor Gordon acknowledges his intellectual debt to Schumpeter, Hansen, and Robertson.

[9] The statements in this and the next paragraph are based upon the evidence and analysis contained in the paper cited in footnote 4.

regarded as a structural feature of the economy, the fact that the overwhelming bulk of federal purchases of goods and services is for national security and may therefore shift up or down with changes in the international political or military situation must also be accepted. Even if it is assumed that a pronounced curtailment of government spending is not likely to recur for some time to come, it must be recognized that private fixed investment is still sizable enough to fall as far below its full employment share of GNP as it did after 1929. If government has placed a high floor under aggregate activity, it is not because of any inherent stability of federal expenditure or because it has displaced what were previously the least stable elements of effective demand. Rather, it is because of structural changes which have accompanied the growth of government—financial reforms, tax and transfer stabilizers, and the assumption of federal responsibility for full employment—and altered the response mechanism; or because the knowledge and ability have been developed to take appropriate discretionary actions to counteract fluctuations in effective demand.

The role of technology and other factors in the creation of investment opportunities in individual industries should also be stressed. If the composition of output were fixed, each industry could grow only at the rate and in the time pattern set by aggregate output, and investment opportunities would consist only of those induced by output growth. In actuality, of course, individual industries grow more or less rapidly than national output; indeed, the processes of growth make this inevitable. Cost-reducing innovations or factor substitutions alter relative prices and outputs even with a given composition of demand. New products compete with the old. Tastes change. Because income elasticities differ, unequal increases occur in the demands for individual products as national income grows. Thus, observed changes in the composition of output are partly the cause of investment opportunities and partly the effect of their exploitation. Moreover—and this is the critical point—investment demand is almost certain to be larger when changes in output composition are appropriate than when they are not. For one thing, autonomous increases may occur in some sectors even when excess capacity prevails generally. For another, as Professor Fellner has emphasized, the disinvestment which may be forced upon a displaced industry is limited per unit of time by the annual rate of depreciation and is likely to be outweighed by the net investment required in a growing industry.[10]

[10] William Fellner, *Monetary Policies and Full Employment* (University of California Press, 1946), Chap. 4. The replacement demand lost could exceed the net investment gained if the growing industry required considerably less real capital per unit of output or if the declining industry lost considerably more output than the other gained through the substitution.

TABLE 7

DISTRIBUTION OF PERCENTAGE CHANGES IN PRODUCTION OF 146 MANUFACTURING INDUSTRIES BETWEEN 1947 AND 1956*

Percentage Change of Production	Number of Industries
Over 600†	2
400 to 599	3
200 to 399	2
160 to 199	1
120 to 159	2
110 to 119	3
100 to 109	3
90 to 99	2
80 to 89	3
70 to 79	7
60 to 69	9
50 to 59	2
40 to 49	14
30 to 39	12
20 to 29	14
10 to 19	19
0.1 to 9	14
0 to −9	14
−10 to −19	9
−20 to −29	5
−30 to −39	3
−40 to −49	2
−50 to −59	0
−60 to −69	1

* Based upon estimates of annual production in 1947 and 1956.

† The two industries in this class experienced production increases of respectively 4000 and 4050 per cent. Note that the class intervals are uneven above 120 per cent.

SOURCE: Production data from Board of Governors of the Federal Reserve System.

Individual industries have grown at widely divergent rates in the postwar economy. Table 7 contains a frequency distribution of the percentage changes in production of 146 manufacturing industries between 1947 and 1956. They range from a positive extreme of 4,000 per cent to a maximum decline of 65 per cent, and they vary considerably even within the more normal limits of growth. Clearly, substantial shifts occurred in the composition of output over the decade.

Let us go a step further. If irregular fluctuations are ignored, we can think of particular industries as subject to individual growth forces which are modified by cyclical influences. Each industry will respond to cyclical movements of aggregate activity according to its price and income elasticities. These elasticities will depend partly upon characteristics of the product and market which are independent of the rate of growth of the industry, but they will also be influenced by the latter. Since rapidly growing industries are increasing their share of national income, they should resist contractions of aggregate demand. Similarly, stable or declining industries should be stimulated less during expansions than their more fortunate competitors. These observations lead

to the hypothesis that systematic differences in the extent of participation in business cycles should exist among industries which are grouped according to their growth over an interval spanning several cycles.

The hypothesis is confirmed by the measures of diffusion presented in Chart III and Table 8. Monthly diffusion indexes were prepared for 146 manufacturing industries and for three approximately equal subgroups classified by amount of growth between 1947 and 1956. Since nongrowth factors affect cyclical sensitivity, it was necessary to control such factors in establishing the growth groupings. Details are given in the notes to Table 8.

Inspection of the chart and table reveals the following facts. The average level of diffusion over the entire decade is highest for the group of rapid growth industries and lowest for the slow group. The same relationship holds for periods of expansion marked off by the business cycle chronology of the National Bureau of Economic Research, but it fails during the contractions.

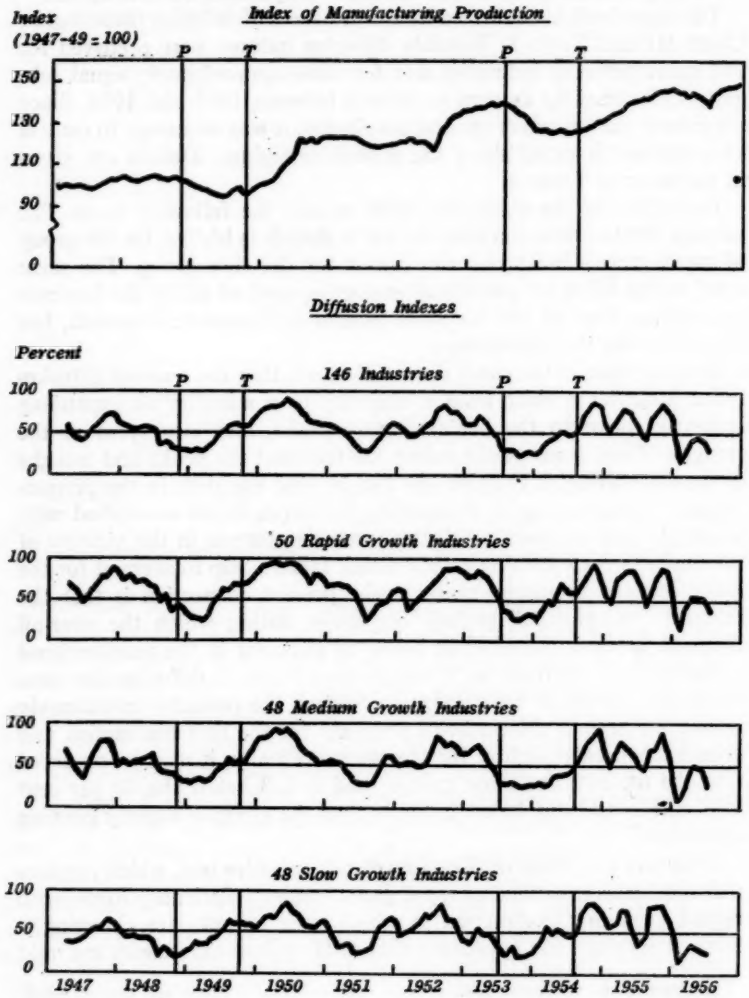
Another look at the chart shows, however, that the over-all diffusion index indicates a shift from a majority to a minority of expanding industries prior to the business cycle peaks, and vice versa at the troughs. These leads partly reflect the fact that the peaks and troughs of manufacturing production are flat, so that the shift in the preponderance of expanding or contracting industries is not associated with a sharply defined reversal of manufacturing output in the vicinity of the business cycle turning points. Other factors help to account for the leads, but the important point in the present connection is that the relevant "contraction" periods are those during which the over-all diffusion index is consistently below 50 per cent in the neighborhood of the cyclical contraction. When average levels of diffusion are computed for periods of contraction so defined, the predicted relationship among the growth groups holds precisely for the first contraction and breaks down only slightly for the second. Finally, it may be observed that the medium and slow groups tend to fall below the 50 per cent level earlier and stay below it longer than the group of rapidly growing industries.

What are the broad implications of this sensitive test, which requires that industries experiencing rapid growth resist deflationary forces with regard even to the direction in which their outputs are changing?[11] First, it supports the hypothesis that mild cyclical movements are mild

[11] Because of the correlation that exists between extent of diffusion and average amplitude of the component industries ("An Experiment with Weighted Indexes of Cyclical Diffusion," *op. cit.*) it is likely that the group differences in diffusion are reinforced by group differences in average amplitudes. It should be emphasized that the relationship between growth characteristics and cyclical diffusion is not a tautological result of the system of industry classification. On this point, also, see the above paper.

CHART III

FEDERAL RESERVE INDEX OF MANUFACTURING PRODUCTION, AND DIFFUSION INDEXES BASED UPON SELECTED GROUPS OF MANUFACTURING INDUSTRIES, 1947-56



Vertical lines indicate business cycle peaks and troughs as dated by the National Bureau of Economic Research.

For sources and notes see Table 8

TABLE 8

AVERAGE MONTHLY INDEXES OF DIFFUSION FOR SELECTED GROUPS OF MANUFACTURING INDUSTRIES DURING SPECIFIED INTERVALS, 1947 TO 1956*
(In Per Cent)

Group	Expansion Apr. 1947 to Nov. 1948	Contraction Dec. 1948 to Oct. 1949	Expansion Nov. 1949 to July 1953	Contraction Aug. 1953 to Aug. 1954	Expansion Sept. 1954 to July 1956	All Expansions	All Contractions	Entire Decade
	PART A. BUSINESS CYCLE PHASES†							
All industries (146)	54.1	44.0	61.4	37.2	59.3	59.2	40.4	55.2
Rapid growth (50)	64.3	44.9	68.9	42.0	63.1	66.3	43.2	61.4
Medium growth (48)	54.6	41.9	60.6	33.6	58.6	58.7	37.4	54.1
Slow growth (48)	42.9	45.3	54.3	36.1	56.2	52.2	40.3	49.6
	PART B. ALL-INDUSTRY DIFFUSION INDEX PHASES‡							
	Expansion Apr. 1947 to July 1948	Contraction Aug. 1948 to June 1949	Expansion July 1949 to May 1953	Contraction June 1953 to Aug. 1954	Expansion Sept. 1954 to July 1956	All Expansions	All Contractions	Entire Decade
All industries (146)	58.4	35.6	62.2	37.5	59.3	60.7	36.7	55.2
Rapid growth (50)	68.9	38.0	69.4	42.7	63.1	67.6	40.7	61.4
Medium growth (48)	56.3	36.4	61.1	34.0	58.6	59.9	35.0	54.1
Slow growth (48)	47.4	32.4	55.7	35.6	56.2	54.3	34.3	49.6

* The production data underlying the indexes were obtained from the Board of Governors of the Federal Reserve System. The 146 series are nonduplicative components of the Federal Reserve Index of Production of Manufactures, but they do not comprise the total index. Each monthly production series had been adjusted for seasonal and irregular fluctuations by the Bureau of the Census, using methods developed largely by Julius Shiskin and described in his "Electronic Computers and Business Indicators," *Journal of Business*, October, 1957, pages 219–267. The 146 series were arrayed in order of cyclical amplitude as estimated by the Shiskin method and divided into equal groups of high, medium, and low amplitude. Each of those groups was in turn split into thirds according to the amount of growth over the decade of the industries in the group (see Table 7 for a frequency distribution of the decade increases). The final groupings by rate of growth were formed from combinations of the rapid, medium, and slow thirds of the various amplitude classes. The diffusion indexes are based upon the monthly directions of change of the industries in each group and show the percentage of the group which increased in each month. Industries which showed no change for a given month were divided equally between the increases and decreases.

† The first and last expansions of the period are not completely covered by the data. The dates of the business cycle peaks and troughs are those of the National Bureau of Economic Research.

‡ The phases based upon the over-all diffusion index were dated by observing when the index crossed the 50 per cent line from above or below in the vicinity of the business cycle peaks or troughs. Thus the "contraction" periods are those during which the index consistently remained below 50 per cent in the neighborhood of a business contraction.

because they are not widely diffused rather than its converse that they are not widely diffused because they are mild. This is because a classification based upon production changes bridging a decade reveals group differences in diffusion which persist through several cycles and are therefore partly independent of the cyclical fluctuations within the period. Here is concrete evidence that diffusion is more than a passive symptom of the transmission of cyclical impulses from a few categories of final demand to numerous prior stages of production. It is a partly autonomous variable, and a full understanding of business cycles requires the study of individual industries to isolate the influence of technology, population growth, changes of taste, market saturation, and other relevant factors on their fortunes and hence upon the fortune of the entire economy.

It does not follow, of course, that the impulses for growth or decay

affecting particular industries operated continuously throughout the decade, although they probably did so in many instances. Those industries which ended the decade far above the level at which they began doubtless rose vigorously through much of the period, but this does not mean that the same forces necessarily favored the same industries in each year. Among the shifts in "tastes" affecting the composition of output were the changing requirements of national defense, for example, and these developed unevenly over time. But this is simply another way of saying that the span was not completely homogeneous with regard to the autonomous forces operating or the industries affected. It still remains true that the industries included in the first group had to expand rapidly during part or all of the decade, and that these intervals of rapid expansion overlapped enough so that a greater-than-average proportion of them were rising at any given time. The resulting offsetting movements during contractions helped to prevent a serious collapse of investment demand directly in the stimulated industries and indirectly through the support afforded aggregate income and therefore the demands for the products of other industries. Were the sample of industries extended to include the nonmanufacturing sector, similar tendencies would be found.

Conclusions

The business cycles of experience have differed according to the combination of autonomous forces and structural factors present in each historical period. A number of structural changes distinguish the postwar economy from its forerunners, and many of these changes have fostered stability by damping induced movements of effective demand. It would be premature to conclude, however, that structural developments have made major contractions a thing of the past. Forces which are partly independent of aggregate activity or its rate of change have also affected the postwar business fluctuations. These autonomous forces include war and cold war influences which have both altered the response mechanism and subjected the economy to short-term disturbances. They include also technology, population growth, and other factors which create investment opportunities in the various sectors of the economy. It must be assumed that substantial swings in government expenditure or private investment may still arise from these sources. The amplitude of induced declines has probably been diminished by structural changes, however, and should the need arise, discretionary steps can be taken to raise public or private expenditures autonomously through fiscal and monetary actions. Certainly no major contraction of the future need be as deep and prolonged as those of the seventies, eighties, or thirties.

DISCUSSION

V. Lewis Bassie: I agree with Achinstein's conclusion that "a substantially greater decline than those of 1949 and 1954 is likely." I also concur in Hickman's leaning to the possibility that "there has been no essential change in the nature or causes of business fluctuations."

There is up to this point little disagreement, but I shall try to sharpen the issue. Perhaps I may do this best by referring to the wholly cautious and proper tone of the two main papers. When I look at what is going on in the economy today, I get from them something of a feeling of unreality.

This partly derives, of course, from my view that it is not only possible to have a serious decline sometime in the future but that we are in the beginning of such a decline right now.

I recognize that it was not the assignment of either of these authors to discuss 1958. Furthermore, I believe that in a meeting of this kind we should keep the discussion on common ground. I should like to have it understood, therefore, that if I seem to be talking about 1958, it is only because I am using that year—with the aid of foresight—as a good illustration of the kind of situation this meeting is all about.

I am grateful to Mr. Hickman for supplying so effectively in the first half of his paper the evidence needed to dispel the notion that "this time things are different." He brings out many of the similarities of this postwar period to that of the twenties; and he might have gone further in developing the close parallel between 1957 and 1929. His paper shows that the ghosts of the past have reappeared, not in the realities of the data he discusses, but in the minds of the "New Era Optimists," who are as much a product of similar conditions as the data themselves.

Although Hickman and I agree that there are no fixed cyclical patterns, I shall take a somewhat different approach from his in interpretating economic developments. This approach is perhaps even more divergent from that of Achinstein, who emphasizes the monetary aspects of the cycle, whereas I think of it primarily in real terms.

To my way of thinking, the basic approach to the cycle is in terms of the forces making for cyclical changes in various important segments of activity. From this point of view, regularity in observed movements is unimportant. In the real world, where the cyclical forces affecting various segments are modified by what is happening elsewhere, they may result in either regularity or irregularity rather than in any stable pattern which might be described as a "cycle." The 1949 recession is a case in point. Then, declines in some cyclical elements—primarily business inventories—released the resources that made expansion in others possible—primarily automobiles and housing—so that the decline was mild.

I regret that time does not permit me to discuss this in detail. I cannot present the evidence for what I have to say, but I shall try to describe it briefly in order to avoid the impression that I am generalizing carelessly.

The essence of my approach is that all the specific cycles, those in particular components, have essentially the same character. They derive from a succession of imbalances on two levels: First, there are imbalances in the position of stocks; that is, stocks may be either excessive or deficient. Second, there are imbalances in the flows; that is, the rate of production may exceed or fall short of the current rate of consumption.

When there is a deficiency of stocks, how may it be eliminated? Obviously by increasing production. But production must be increased, not only to bring it into line with consumption, but enough more than that to build inventories. This policy has always been successful. In time, the deficiences are worked off.

But note that this success is always achieved by unbalancing the flows. Production is raised above consumption and ultimately has to be brought back into line. Making this adjustment, however, produces the opposite kind of imbalance in the stocks. The latter continue to advance until the excess of production is eliminated, but by then incomes and demand are lower, so that the existing stocks are excessive in relation to the new level of demand.

This excess has to be eliminated by unbalancing the flows in the opposite direction. That is, production has to be cut to a point below consumption to work off the excess, and activity is thus forced down into depression.

This mechanism works quite differently in the various segments, depending primarily upon differences in the time periods required by the processes of production and consumption. The cycle is short and symmetrical in the case of business inventories as such, because periods of production and consumption are short. It is long drawn out in the case of housing and productive facilities because the processes of production are prolonged and the processes of consumption are even slower. Stocks of structures hardly ever decline. They just stop rising for a while.

There is one point in the fixed investment cycle that tends to make for extremely sharp changes. That is just after a downturn, when the two kinds of imbalance are working together. Today we are in such a situation. We have both excess capacity and an excessive rate of new investment. The excess capacity is not confined to industries like steel, where demand has declined. It has appeared in other industries whose demand has remained stable at high levels because their capacity has expanded. Furthermore, the recent rate of new investment at 37 billion dollars is far above the requirements for growth.

These imbalances are working together to depress new investment, and the decline will probably be both severe and long drawn out. Looking ahead, there can be no adjustment by the middle of next year. At the end of 1958, capacity will be higher and production lower. The imbalance of position that is helping to force the current decline will be worse at that time. It will tend to force a still bigger decline in 1959.

Moreover, business inventories have been in much the same position in recent months. With the recent decline in sales—and this means sales in physical volume terms, not in current dollars—inventories are excessive and have to be liquidated. The rate of liquidation will tend to increase in irregular

steps as long as sales recede. All forms of business investment will be driving the economy toward depression.

Can we hope that autos and housing will come to the rescue, as in 1949? This seems to me a futile hope. Those segments are governed by the same kind of cyclical forces, and their position has basically changed since 1949. There are no longer any backlogs of unfilled demand. On the contrary, both have been approaching the point of market saturation during the last two years.

Nor can consumer expenditures generally be regarded as an efficient buoy. The role of consumption has not been at all peculiar in this postwar period. If account be taken of tax reductions and increases in transfer payments, consumption has not been greatly out of line with income. This deviation might be attributed, as Achinstein suggests, to credit expansion. Alternatively, it might be attributed to the stimulation of new highs in the stock market. Now the market is off from the peak. The sobering effects of its decline will affect not only consumption but business investment also.

That is the basis on which I believe that we are facing a conjuncture of cyclical forces in the present downturn. I do not think this depression will be as severe as that of the thirties. It can be bad enough without being that bad.

The magnitude of this conjuncture is not widely appreciated. A friend from Washington told me that after the first quarter of 1958 the annual rate of federal expenditures would be increased one to two billion a quarter. He was surprised when I answered that that would be only a fraction of what is needed to hold the economy stable, let alone turn it back up. Yet I think that reply is a fair appraisal of the magnitudes involved.

The government—speaking broadly, not of particular individuals—does not yet see the problem. When it does, it will have obstacles to overcome before it can begin to act. By the time it acts, the decline will have progressed to the point of making that action ineffective. My calculations indicate that the decline will be continuous through the year ahead. Unemployment in excess of five million must be expected before the end of 1958, and at that time, the end of the contraction will not yet be in sight.

EMERSON P. SCHMIDT: The two papers seem to say that neither our experience to date nor the observable institutional and structural changes of our economy furnish us with any convincing evidence to support the implied hope expressed in the general title of this session.

But the title deliberately was left vague. If it is asked whether a repetition of the Great Depression of the thirties is likely, the speakers would be less cautious. This spells modest progress. Perhaps it is some cause for commendation of economists for their analysis of cyclical disturbances and possibly indicates a favorable appraisal, on net balance, of the structural and institutional changes of our economy.

In their separate approaches, both papers stress key relevant issues. Both state or imply that the fundamental causes of the cycle have not been removed. Both recognize that major wars generate war booms and subsequent readjust-

ment problems; and then postwar catching-up booms tend to breed new maladjustments. But neither argued explicitly that enduring peace or stability in armament expenditures would be enough to assure against major contractions.

The two papers are useful and do not call for serious criticisms. But they have not measured the strength of depression snubbers or automatic stabilizers, the power of monetary and fiscal policy, and they leave several issues unresolved to which attention might be called.

Dr. Hickman left unanswered the question as to why we have escaped a mammoth general price decline so far, after World War II, as against our experience after other major war booms. Since there is evidence that major contractions are generally associated with persistent and pervasive price downtrends, the absence of such a price collapse since 1945 suggests that our economy may now be less vulnerable. One may raise the hope that major depressions are less likely, when we recognize that standard economics textbooks in the twenties revealed little grasp of the facts, or at least their significance, that loans create bank deposits and that liquidation of loans shrink them, and that in periods of underconfidence efforts should be made to maintain the money supply (or expand it) and that this shortfall in understanding helped to bring on the depression of the thirties and prolong it. Neither speaker addressed himself to this improved knowledge and this changed policy of the monetary authorities. From the peak quarter of 1929 to the low of the depression, demand deposits, our chief form of money, declined by about 40 per cent. The shrinkage in money made it an excellent vehicle for hoarding—although with fatal systemic results. It is not probable that such a powerful deflationary process need or will recur.

Because of the sheer size of the national budget, the power of fiscal policy to offset private decline needs more appraisal. The same is true of the national debt and the power of the monetary authorities to move the debt into and out of the banking system which may enhance and reduce private spending, as needed.

Both speakers emphasized the unstabilizing role of jerky capital formation. It would be helpful, if time permitted, to evaluate, in terms of the next year or two, the impact of the liberalized depreciation policies adopted in the 1954 Revenue Act, the defense-oriented rapid amortization policies, and the government's virtual command to business after the Korean scare to create excess plant capacity (the plant mothball program) to be ready in case of another major war. Undoubtedly, these three policies, although desirable in terms of their explicit immediate objectives, contributed to our recent capital boom which is now abating and is causing some contraction in our economy.

Dr. Achinstein based much of his analysis on what he called the widely-accepted long (fifteen to twenty years) residential construction cycle. But the recent book (*Stabilizing Construction*) by Miles Colean and Robinson Newcomb questioned the prevalence of such a cycle, concluding that "there have been no clear-cut over-all major 18- to 20-year cycles. The major cycles which have occurred have resulted from or followed the Civil War and World War I." With reference to his comment on the growth of mortgage debt, if

serious contractive forces were to develop, what difference does it make to have people owe on mortgages as against owing rent? And does it make our economy more or less vulnerable to have mortgage debt owed by the millions of people as against a smaller number of builders and landlords?

He also concluded that because the commercial banks now finance a large share of installment credit, "it is difficult to see how this change can have failed to weaken the effectiveness of general monetary controls. . . ." Unless he assumes that the demand for installment credit is highly inelastic and will get accommodated largely regardless of its cost and bank reserves scarcity, it is difficult to follow his conclusion.

Dr. Achinstein stated that the greater power of unionism will hold the price of labor and this is more likely to maintain customary expenditures. If one assumes that major maladjustments in the wage structure do not occur, this might be a plus factor. While wages were relatively sticky when few workers belonged to unions, such as in 1930 and 1931, they are much more rigid now, and we have much more government upward wage pressure, more wage fixing through minimum wage laws, Walsh-Healey and Davis-Bacon laws. Because of long-term contracts providing for automatic annual increases (some running as long as five years) and other increases being negotiated even when the demand for labor is falling, is this situation more likely than formerly to concentrate any contractionary movements more forcefully on production cutbacks (real income)? Is this a new built-in destabilizer? Similarly, do the targets of the Employment Act of 1946 give our economy a more persistent inflationary bias and thereby help to generate periodic setbacks? If so, would it be advisable, in order to help prevent major business contractions, to amend the Act to include as one of the targets a reasonably stable dollar?

Finally, has the enormous increase in statistical knowledge of inventories, prices, markets, additions to plant and equipment, etc., given government officials, business executives and the economics Ph.D.'s on their staffs better advance insights of emerging maladjustments and trouble spots—to the point where advance corrective action may be taken? Or does better knowledge have nothing to do with prescriptions and behavior? If the hangover came before the cocktail party rather than after, Bacchus and his helpers would be less fully employed.

Daniel Hamberg: In reply to the question posed as the topic for this session, both speakers have agreed that another major contraction is a distinct possibility, despite the apparent structural improvements in the economy made in recent years. To this view I would like to add my strong assent. In doing this, I should like to issue a number of caveats against the one-sided and exaggerated views of recent structural changes in the economy that are now current. My objective here is to try to place things in a broader perspective for efforts to answer the question, "Is another major contraction likely?" Because of the nature of the question, I shall confine my remarks to the role of some of the recent structual changes during contractions.

Since we seem to have been carried away by the prospects offered by

many new, and automatic, stabilizers, I should like to apply my first antidote by pointing out the existence of some old ones—familiar old ones that existed side by side with the economic turbulence of the past. First, there is the well-known resistance to reductions in living standards offered by consumers in the face of falling incomes; rather than consumption, it is saving that may be expected to decline most during periods of contraction. In turn, the implied existence of a high marginal propensity to save during such periods means a comparative low multiplier, and this, of course, is definitely stabilizing. Although first suggested by Duesenberry, this stabilizing effect of consumer behavior presumably existed long before he thought of it.

Paralleling the stabilizing behavior of consumers has been the proclivity of corporations to maintain dividend payments in the face of declining, and often zero and negative, profits. Whether one wishes to treat this behavior as a factor maintaining personal disposable income, and therefore consumption, in the face of declining GNP, or as a high marginal business propensity to save to be added to the high marginal consumer propensity to save, the result is the same; namely, a stabilizing reduction in the value of the multiplier.

There are other ways in which business behavior tends to be stabilizing in some aspects during contractions. One is the well-known inability to disinvest faster than the rate of depreciation. Another way, often overlooked, stems from the rise in the level of many elements of fixed expenses during periods of expansion and the inability to contract these fixed outlays during ensuing periods of contraction. In addition to fixed interest charges, these include such things as irreducible managerial, maintenance, sales, and research staffs. Hence, although investment may fall during downswings, sales and national income will tend to fall in a smaller proportion as a result of the maintenance of a higher level of fixed (cost) outlays.

Even population growth and the associated upward secular drift of the consumption function on national income has a stabilizing effect. Even if the additions to population do not immediately enter the labor force, or if they do, are rendered unemployed, they may be expected to maintain a certain minimum amount of consumption, whether through dissaving, borrowing, charity, or public doles. And let us remember that relief payments during contractions did not originate entirely in the thirties.

It is clear from history that these and other stabilizers that might be mentioned failed to save capitalism from the violent instability that has characterized its past economic growth. Many people are convinced, however, that the new stabilizers (added to the older ones) will now do the trick. They may of course be right. Nonetheless, although I am inclined to feel that the new stabilizers may prevent the recurrence of debacles like that of the thirties, I believe with our previous speakers that we may be inclined to go overboard in ruling out the recurrence of contractions substantially greater than the two postwar recessions. My reasons are that we may be guilty of overrating the importance of some of the new stabilizers, while imputing a misleading role to others, and at the same time, we may be guilty of overlooking a number of new destabilizing developments.

Let us examine briefly some aspects of the allegedly important new stabilizers. First, there are the various financial reforms, such as margin requirements in the stock market, supposedly designed to curb speculative excesses and thus mitigate the impact of a downturn; mortgage amortization and government mortgage guarantee and insurance programs, as well as bank deposit and saving and loan share insurance, all designed to remove the threat of widespread financial failure and liquidity crises. To these well-known reforms we might add other stabilizing financial developments. One is the divorce of the "Fed" from the "real bills" doctrine, thus ensuring a willingness to pump reserves into the system in times of financial crisis and ensuring against a recurrence of the incredible position taken in the midst of the 1929-33 contraction. Another, more conjectural, stabilizing financial development stems from the growth in relative importance of the nonbank financial intermediaries, like insurance companies and pension funds; during contractions these may continue to invest the funds that keep coming in, because their usually large net receipts make it possible for them to meet their obligations without resort to asset liquidation. It has also been suggested, following the experience of the insurance companies in the thirties, that the large volume of net receipts and financial strength of many of them make it unlikely that they will do any precautionary and speculative hoarding in periods of contraction.

There is certainly much truth in the belief that these various forms of financial improvement and change should go far toward preventing the recurrence of liquidity crises. But by way of caution, it is worth noting that well over half of the outstanding dollar volume of mortgages, for example, is not covered by government insurance and guarantee. Nor does there seem to have been much improvement from margin requirements in the stock market; judging from the way stock yields have been rubbing noses with bond yields in the last couple of years, the stock market seems as overinflated as it was in the late twenties. Moreover, most of the growth in relative importance of the nonbank financial intermediaries occurred before the thirties, and they do not appear to have helped much in the liquidity trap we got into then. In part, we still need to know more about the relative importance of financial institutions like insurance companies and pension funds in the loanable funds markets before we can determine the importance of their low-liquidity preferences in times of contraction. We also need to know to what extent the change in asset preferences toward more liquidity at such times stops or even reverses the growth in relative importance of the nonbank intermediaries and reduces their net receipts available for new asset acquisition. And how much do they shift the composition of their portfolios in favor of safe and liquid governments at the expense of private securities and loans?

Equally important, faith in the belief that these institutional financial changes will prevent the recurrence of another major contraction rests on the implicit assumption that those of the past were uniformly induced by financial crises. Some no doubt were, and periods of stagnation like that of the thirties may have received added pressure from them, but most major contractions of the past were well under way before banking and financial crises plunged

them deeper into the recesses of depression. It is not necessary to picture depressions of the awful magnitude of the thirties in order to imagine major contractions in the face of these new financial developments.

Another alleged stabilizing influence that has received strong emphasis of late is the reputed use of long-run economic projections and capital budgeting procedures by business firms. I cannot think of any single greater exaggeration than this one. In the first place, these techniques appear to be employed primarily by the very large firms, and these still do not account for more than a small fraction of gross private investment. Furthermore, what evidence there is indicates that, aware of the grave weaknesses of existing forecasting and projection techniques, few firms apparently take their forecasting programs very seriously. And though they may make long-range capital budget plans, these plans are very tentative and subject to rapid change in response to changes in short-run economic conditions. (See R. Eisner, *Determinants of Capital Expenditures*, 1956, pages 15-19.) Witness the recent sharp revisions downward at the slightest signs of recession. It is still true, it seems, that business firms "have a relatively high discount for risk and uncertainty. Since the distant future is more uncertain than the near future, expectations with regard to the relatively near future are still likely to prove decisive." (*Ibid.*, page 18.)

Another apparent stabilizer is the rise in the share of federal spending in GNP—from about 1 per cent in 1929 to about 11 per cent in 1956, largely at the expense of consumer spending on nondurables and services. I have little doubt that this development will constitute a new stabilizing influence during contractions. This optimism rests on the admitted assumption that federal spending will no longer be curtailed in the face of falling revenues in order to balance the budget. If this is true, then the over-all marginal propensity to spend, and hence the multiplier, will tend to be smaller than formerly during downswings. For even though the displaced consumer spending may also be of the type most resistant to reductions in income, the marginal propensity to consume must surely be above zero during contractions, whereas we are positing a zero marginal government spending propensity.

On the other hand, we must be careful to keep separate income-induced changes in government and consumer spending from autonomous changes in these spending categories. As Dr. Hickman has emphasized, for reasons associated largely with national security and foreign aid (autonomous reasons), federal spending has been the most variable component of total spending in the postwar economy. In general, the potential range of autonomous shifts in government spending must be considered far greater than the ordinary range of shifts in autonomous consumer spending. This suggests that we have more to fear in the future from fluctuations in the economy initiated by autonomous changes in government spending than we have ever had from like changes in consumption. In this sense, the economy must be considered potentially less stable than before.

Perhaps the most worked-over new form of stabilizer is the great rise in cyclically sensitive personal and corporate income taxes and (to a much lesser degree) transfer payments. No doubt these developments are important,

but in terms of multiplier effects, how important? In a recent paper, Dr. Hickman (see footnote 4 in Hickman's paper above) has produced some rough estimates of the effects on the multiplier today as compared with that of the twenties. These estimates indicate that the sharp growth in new types of taxes, etc., has reduced the value of the multiplier (based on the marginal propensity to consume alone) from approximately 3 to a present value of approximately 2. This is an impressive decline and offers some fairly solid support to all the noise about these particular new forms of (automatic) stabilizers. But a multiplier of approximately 2 is nonetheless a sizable one. With still plenty of room for autonomous fluctuations in private investment and with a now broader range for autonomous fluctuations in government spending, a multiplier of 2 suggests that there is equally room yet for major contractions.

Finally, another stabilizing development that has gone unnoticed is the apparent secular decline in the aggregate capital coefficient, and therefore implicitly the accelerator. *Ceteris paribus*, the amplitude of business cycles tends to vary directly with the accelerator. Hence, the secular decline in this coefficient may be expected to have a damping tendency on the business cycle, contractions as well as expansions.

Granted that we have had a number of new stabilizing developments that, added to the numerous old ones, would seem to reduce the possibility of future major contractions, we should not forget that there have been others that have tended to have just the opposite effect. With time running out, let me just mention some of them and suggest briefly the nature of their destabilizing effects. First, there is the long-run decline in the share of spending on all nondurable goods in GNP, with a corresponding rise in the share of spending on all durables. This means that we are confronted with a rise in the relative importance of spending on goods whose demand is deferrable during downswings, and this is surely destabilizing.

As might be expected, increased spending on consumer durables has been a leader in the rise in the relative importance of spending on all durables. We are now faced with the rise in importance of a consumer durable goods accelerator whose destabilizing potential on investment in the consumer durables industries is enormous. If the stock of consumer durables is a function of income and the demand for consumer durables therefore a function of income change, a constant (absolute) rate of growth in consumer income means a constant level of consumer demand and a zero investment demand in the consumer durables industries. Correspondingly, a mere decrease in the rate of increase in consumer incomes, *ceteris paribus*, means negative net investment in these industries.

Associated with the rise in spending on consumer durables has, of course, been the rise in consumer credit, with destabilizing effects of its own. For one thing, consumers who are confronted with fixed debt obligations will be unable to curtail their saving as much as formerly during downswings in an effort to maintain living standards. Moreover, consumers who buy durables heavily on credit are usually the ones whose over-all financial position is relatively weak. This makes them likely candidates for credit restrictions during contractions, just as lenders shy away from small firms in times of danger.

Accompanying the increased difficulty of consumer borrowing during contractions is also likely to be an increased reluctance to borrow when incomes and employment, realized and expected, are declining. The threat of default on consumer debt also looms large during periods of contraction. With banks alone now responsible in one way or another for more than half of consumer credit, they and other financial institutions are certainly in a more dangerous position, and there is no government insurance or guarantees to bail them out.

Other financial developments are also potentially destabilizing during contractions. As others have noted, the enormous growth in the federal funds market and the financing of government bond dealers and sales finance companies by nonfinancial corporations are cases in point. Both these developments mark a pyramiding of liquid assets, resulting in a general decline in liquidity and an inherently unstable money market, whose greater vulnerability can set off a financial crisis during a contraction. Insolvency or illiquidity of one important organization can easily trigger a chain reaction that impairs the financial strength of many other organizations.

Moreover, the rise in relative importance of financial institutions like insurance companies and big pension funds (and social insurance as well) has destabilizing effects, too. For the growth in relative importance of contractual saving that is associated with the growth in these financial institutions reduces the ability of saving to fall during contractions, and thus exerts more downward pressure on consumption outlays. This destabilizing effect must be set off against the stabilizing effects of the growth in nonbank financial institutions mentioned earlier.

It is well-nigh impossible to determine to what extent these destabilizing developments and others, like the increasing preference to finance investment outlays out of profits that, themselves, follow the business cycle so closely, have offset the stabilizing improvements. With the rest of the crowd, I am inclined to be optimistic on this score, but only to the extent of ruling out a repetition of the nineties and thirties, not of contractions still substantially greater than the two postwar ones.

MONETARY ANALYSIS AND THE FLOW OF FUNDS

A CYCLICAL MODEL FOR POSTWAR U.S. FINANCIAL MARKETS*

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I

This financial model is characterized by three broad features. First, the model presupposes that financial markets can be analyzed by means of the flow of dollars passing through them in much the same way that nonfinancial markets are analyzed in models using flows like consumption and investment. As a result, the model places less emphasis than is usual on price variables such as interest rates and on stock variables such as the quantity of money or liquid assests. Secondly, the choice of variables for the model is somewhat pragmatic. The variables are mainly financial market flows with large year-to-year movements during the post-World War II period. Annual data are available for all the variables and quarterly data for most of them. Further, in setting up behavior equations major reliance is placed on more or less obvious relations to be found in the data. Finally, the model as a whole is built up from its parts. A number of submodels are first developed for various sectors, each describing the basic financial behavior of the sector. Then these sector submodels are fitted together to form the complete model.

The model deals with the annual flows through four broad financial markets—federal obligations, corporate securities, bank loans, and mortgages—and also with the change in cash balances. There are thus five financial claims in all. We focus on the dealings in these claims by five sectors: consumers, corporate business, the federal government, a banking sector, and an insurance sector. In Exhibit I the lower or financial portion of the display of variables shows these five sectors and transaction types. The letters in these cells represent financial flows that are to be variables in the model. Each one represents the net increase in the holding of (use) or liability for (source) a particular claim by a particular sector.

* The author wishes to acknowledge the help of the Brookings Institution; this model was developed while the author held a fellowship there. Thanks are also due for the comments and criticisms of Mr. Stephen P. Taylor, of the Federal Reserve Division of Research and Statistics, and Professor Morris A. Copeland, of Cornell University.

EXHIBIT I

Variables and Equations

I. *Display of Variables.* All the variables used in the model with the exception of two are presented in the condensed flow-of-funds summary matrix below. The exceptions are r_a, an average of the interest rates for federal obligations and corporate securities, and r_d, the difference between the interest rates for federal obligations and corporate securities.

Display of Variables

Sectors:	Consumer		Corporate Business		Federal Government		Bank		Insurance	
Transaction Categories:	u	s	u	s	u	s	u	s	u	s
Nonfinancial: Product expenditures[1]	H_c D_c		F_b I_b		G_g		*		*	
Receipts, net[2]		Y_c		Y_b		Y_g		†		Y_i
Financial: Δ Currency and deposits	m_c		†		†			m_m	*	
Δ Federal obligations	f_c		f_b			f_g	f_m		f_i	
Δ Corporate securities	s_c		*	s_b	*		†	*	s_i	
Δ Bank loans		l_c		l_b		*	l_m			
Δ Mortgages	*	b_c	*	*	*		†		b_i	

* Variable is assumed negligible.

† Variable is assumed constant.

[1] Product expenditures are consumer new housing expenditures (H_c), new consumer durable expenditures (D_c), corporate fixed investment (F_b), corporate inventory investment (I_b), and federal government purchases of goods and services (G_g).

[2] Nonfinancial receipts, net for each sector equals total nonfinancial receipts less nonfinancial expenditures other than product expenditures.

Note: The definitions of all sectors and transaction types are taken from the Board of Governors of the Federal Reserve System, *Flow of Funds in the United States 1939–1953*, except that the banking sector here excludes mutual savings banks and the postal savings system. The rate on federal obligations used in Appendix A is the average of the rates on new bill issues and long-term bonds, old series. The corporate security rate is Moody's for total corporate bonds. These data appear in the *Federal Reserve Bulletin*.

II. *Exogenous Variables.* All nonfinancial expenditure and receipt variables in the display are exogenous except H_c. Financial flows m_m and in effect m_c and f_g are exogenous (see IV. *Accounting Equations*). The surplus for consumers ($Y_c - H_c - D_c$) is exogenous. The surplus or deficit for all other sectors is exogenous since it can be computed from the exogenous nonfinancial variables for each sector.

III. *Endogenous Variables.* All financial flow variables in the display except m_m, m_c, and f_g are endogenous. Also, r_a, r_d, and H_c are endogenous. There are 15 endogenous variables in all.

IV. *Accounting Equations.* There is a budget equation corresponding to every sector column and a transaction type equation corresponding to every row in the display. All flows of missing sectors and missing financial transaction types are assumed constant. Thus, each sector's total sources is assumed to differ from its total uses by a constant. And each transaction type's total sources is assumed to differ from its total uses by a constant.

The model uses the 10 accounting equations corresponding to the financial portion of the display. Of these 10 accounting equations, 2 solve immediately, m_c being the only unknown in the Δ currency and deposits row and f_g being the only unknown in the federal government column. There remain 8 accounting equations, 7 of which are independent.

(Continued at bottom of page 147)

Income and product circuit variables are the prototypes for the nonfinancial expenditure and receipt variables in the upper portion of the display. In general these variables are considered given and so are the sector surpluses or deficits that can be computed from them. The submodel for each sector will focus on how the sector finances this deficit or disposes of this surplus.

We first consider the corporate submodel. How does the corporate sector finance its deficits? Corporations borrow in two main ways: by security issues and bank borrowing. We shall assume that net security issues are solely a direct function of corporate fixed investment and that bank borrowing is similarly related to corporate inventory investment. Corporations obtain the rest of their funds (and dispose of any extra borrowing) in the submodel by variations in their holdings of federal obligations, the increment to such holdings being large when there is less need for borrowing and the increment being small (perhaps negative) when funds are needed. The increment to corporate cash is assumed constant.

In this corporate submodel the volume of security and bank loan borrowing depends entirely on the corporate demand for such funds. What about the influence of supply conditions in these markets? In the corporate security market we expect a tightening supply of funds to be reflected in tighter borrowing terms, including a rising interest rate. But corporate business is dominated by large corporations that are

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EXHIBIT I—*continued*

V. *Behavior Equations.*

	General Form		*Illustrative Form*[3]
Corporate business:	$l_b=f_1(I_b)$	(1)	$l_b=.8I_b$
	$s_b=f_2(F_b)$	(2)	$s_b=.4F_b-2.0$
Insurance:	$b_i=f_3(r_a)$	(3)	$\Delta b_i=-2.2r_a+6.0$
	$s_i=f_4(r_a, r_d)$	(4)	none
Consumer:	$l_c=f_5(D_c)$	(5)	$l_c=.2D_c-2.0$
	$b_c=f_6(H_c)$	(6)	$b_c=.8H_c$
	$f_c+s_c=f_7(r_a)$	(7)	$f_c+s_c=6.0r_a-13.8$
	$s_c=f_8(r_a, r_d)$	(8)	none

[3] These equations are used to provide the illustrative data used in the text. The parameters in these linear forms are graphically determined from the lines arbitrarily placed on the scatter diagrams in Appendix A. This procedure is intended merely to give a very rough approximation of the magnitudes involved and to show some evidence in support of the model's behavioral assumptions.

VI. *Solution Procedure.* (NOTE: Prior to the formal solution of the model, the currency and deposits equation has solved for m_c and the federal government budget equation has solved for f_g.) Equations (1), (2), and the corporate budget equation solve for l_b, s_b, f_b. Equation (5), the bank budget equation, and the bank loan market equation solve for l_c, l_m, f_m. Equation (3), (7), the insurance budget equation, and the sum of the corporate security and federal obligation market equations solve for r_a, b_i, f_c+s_c, f_i+s_i. Equations (4), (8), and the corporate security market equation solve for s_c, s_i, r_d. The mortgage market equation solves for b_c and equation (6) solves for H_c. Equation (7) solves for f_c and the insurance budget equation solves for f_i.

usually able to float securities even in the tightest market, if they so desire. If, in addition, the high interest cost does not influence corporate investment or the choice among our financing methods, we have the model formulation.

In the bank loan market, also, it seems probable that the demand for funds will predominate. But bank credit rationing—not merely high loan rates—may be expected when bank lending capacity is being pressed. However, such rationing is not easily observed in the post-World War II data and it has not been incorporated into the model.

In the postwar period the bulk of the temporary variation in corporate financing, particularly that resulting from inside fund movements, has been cushioned by holdings of federal obligations rather than cash. High postwar interest rates have provided an incentive for economical cash balance management. As a result, the corporate cash increment in recent years has been small and stable and we have assumed it constant in this submodel. Unfortunately, the revised flow-of-funds data for recent years in the October, 1957, *Federal Reserve Bulletin* make this assumption less tenable than do earlier data.

The submodel for the federal government assumes that changes in the federal deficit will be reflected dollar for dollar in changes in the net issue of federal obligations. The federal cash increment has been small in most years since World War II and we neglect its movements as well as federal activity in other financial markets.

The banking sector in the model consists of a consolidation of all commercial banks, the Federal Reserve System, and Treasury Monetary Funds. The sector has changes in currency and (demand and time) deposit liabilities—which we shall consider to be the money supply—and corresponding changes in portfolio assets in the form of federal obligations, corporate securities, mortgages, and bank loans. We shall assume that the Federal Reserve controls the movement of the total currency and deposit liabilities and thus the change in the total size of the banking sector's portfolio. As a consequence, the commercial banks have discretion to change only the composition and not the size of the banking sector's portfolio. They substitute one financial asset for another.

Banks give first priority to satisfying bank customer loans and they will liquidate federal obligations, if necessary, in order to do so. The year-to-year movements of bank lending on account of mortgages and securities are minor in comparison to bank loans and we have elected to disregard them. In summary, we have a model banking sector whose increments in currency and deposit liabilities and total bank credit are determined (exogenously) by the Federal Reserve; whose lending on account of bank loans meets in full the demands of borrowers; whose

increment to security and mortgage holdings is constant; and whose lending on account of federal obligations is residually determined.

We shall take account of only one other financial institution in the model: insurance companies. Mutual savings banks, savings and loan associations, and private pension funds specialize in only one or two of our financial instruments, minimizing the possibility of portfolio shifts. Their portfolio items show rapid growth but relatively little cyclical movement.

The insurance submodel assumes that insurance companies have a given surplus, roughly equal to their premium and investment income less benefit payments and operating costs, which is allocated among acquisitions of mortgages, corporate securities, and federal obligations. In contrast to banks, insurance companies are not in business to make a particular type of loan. Their portfolio policy favors the instrument whose rate of return is relatively high. But their reactions show considerable inertia; the favored instrument will merely attract somewhat more than its usual share of the annual surplus.

In determining their mortgage purchases, insurance companies take all the conventional mortgages obtainable; in recent years the rates on conventionals have been high enough to make them continuously attractive. But the large year-to-year movements in insurance mortgage acquisitions are found in government underwritten mortgages, which, with their lower and less flexible rates, must compete with securities for a place in the insurance portfolio. If the rate on government underwritten mortgages is well above the rates on other securities, mortgage acquisitions will tend to be larger than usual. Since this mortgage rate is less flexible than the rates on other securities, the movement of this differential can be judged by the movement of the other rates. Thus, we assume insurance acquisition of mortgages to vary inversely with an average of the corporate security and federal obligation rates. r_a

In deciding their net corporate security purchases, insurance companies presumably make one rate comparison with mortgages and another with federal obligations. Thus, the insurance acquisition of corporate securities is assumed to vary directly with both the average of the corporate security and federal obligation rates (for the security-mortgage comparison) and the difference between these rates (for the security-federal obligation comparison). These interest rate variables will be referred to as the average rate and the rate differential. The remainder of the insurance surplus is assumed to go into—or out of—federal obligations.

What does our last sector, consumers, do with its surplus; i.e., with the financial portion of its saving? Since consumer financial information is rather scarce and inaccurate, we are forced to rely rather heavily

on the imagination here. Consumers both lend and borrow extensively at the same time. Presumably the consumers who borrow are different from the consumers who lend. Let us assume the consumer sector consists of two groups: a small rich group and a large poorer group.

The rich group has a large nonfinancial surplus, which we may guess is placed to some extent into cash but mainly into federal obligations and securities—including state and local obligations with which our model does not deal. It seems likely that this group manages its portfolio carefully and responds to interest rate levels and differentials in doing so. We assume that rich consumers step up their placement of funds in securities as the average interest rate rises, and also that they will favor corporate securities over federal obligations in this placement when the corporate rate is high relative to that on federal obligations; i.e., when the rate differential is high.

The large poorer group, on the other hand, does the bulk of the mortgage and bank borrowing done by consumers. The mortgage borrowing we assume related to new housing expenditures, the bank borrowing to consumer durable expenditures.[3] The poorer group places funds in financial assets, too, but we guess this group to be lethargic in managing its financial assets, tending merely to let its spare income pile up in the form of cash or close substitutes for cash. This provides the basis for one feature of the model as a whole: cash drains to consumers. Because the cash increment of every other nonbank sector is assumed constant, any change in the money supply increment will be reflected in a corresponding change in the consumer cash increment.

When we combine our rich and poorer groups, the consumer submodel ends up with four behavior equations: consumer mortgage borrowing directly related to new housing expenditures, consumer bank borrowing directly related to new consumer durable expenditures, consumer acquisitions of federal obligations plus corporate securities directly related to the average rate, and corporate security acquisitions directly related to both the average rate and the rate differential.

II

The details of the particular way we have put the submodels together appear in Exhibit I. In summary, for the model as a whole there are 14 endogenous financial variables, 12 financial flows in the Exhibit I display (all financial flows except m_m, m_c, and f_g) and two interest rate variables (r_a and r_d). But there are 15 independent equations, 8

[3] Because the model takes no account of flows in trade debt and credit, a considerable portion of consumer credit is apparently omitted. However, much of this trade credit to consumers is extended by financing firms who in turn obtain most of the funds from banks.

behavior equations, and 7 independent accounting equations from the financial flow matrix. We have chosen to equate the number of unknowns and equations by making new housing expenditures an endogenous variable. To justify this step we must briefly digress.

In the model when an exogenous expenditure variable is tightly tied to a borrowing instrument, the demand-for-funds side of the particular financial market is played up. Such an arrangement would fit well the situation of financing housing purchases via conventional mortgages where, as we have indicated, the supply of funds accommodates to the demand. But in government underwritten mortgages—wherein lie most of the postwar cyclical movements—demand for housing and mortgage funds on such easy terms has been plentiful and the supply of funds seems largely to have determined the mortgage flow. Making housing expenditures endogenous in the model will emphasize the supply side of the mortgage market.

Our model is, then, one containing 15 equations and endogenous variables. But instead of the 15 equations solving simultaneously, we are able to follow chain-like paths through the equations, occasionally coming to small groups of equations that are simultaneous. If our model had more simultaneity, there would be more room for mutual adjustments among the sectors and markets, but, paradoxically, we would see less of the mechanics of how such adjustments take place.

To trace through the solution, we start with the exogenous expenditure variables. Corporate fixed investment determines the dollar volume of corporate security issues; i.e., the corporate demand for security funds. Similarly, corporate inventory investment determines corporate bank borrowing. Given the corporate deficit, these two financial flows plus the corporate budget will determine the volume of federal obligations that corporations must buy or sell, and the corporate column is solved.

The bank loan market is next. Banks in the model meet in full the demand for bank loans by corporations and by consumers, the latter as determined by the exogenous consumer durable expenditures. This bank lending, together with the given change in the money supply, will determine bank sector acquisition or liquidation of federal obligations. As we noted above, the federal government sector is already solved, exogenous expenditures and receipts determining the net volume of federal obligations issued or retired.

Consumers and insurance remain. We think of these sectors as savers —as absorbers of financial instruments. In the model these sectors must absorb the excess of what has been issued in the federal obligation and corporate security markets over what has been absorbed by banks, corporations, and the federal government. If we view the markets for

federal obligations and corporate securities as a single combined market—the capital market—we have both the supply of securities that must flow through this market and the demand for these securities by consumers and insurance as functions of the average interest rate in the market.[2] These equations solve for the volume of capital market securities taken by each of consumers and insurance, the average interest rate, and the volume of insurance funds remaining for mortgage acquisition. This capital market solution is the heart of the model.

The remainder of the solution proceeds in two directions. On the one hand, the mortgage lending by the insurance sector determines mortgage borrowing by consumers and hence their housing expenditures. On the other hand, the individual corporate security and federal obligation markets within the capital market must be solved for. In the model the rate differential between these two instruments will adjust sufficiently to induce the required purchases of each instrument. This completes the solution.

III

To put the model through its paces we ask: How do cyclical movements in nonfinancial markets impinge on financial markets and how does monetary policy influence the result?

Assume a 5 billion dollar step-up in corporate fixed investment. Various income circuit flows will be generated by such a boom and we must make some assumptions about what they do to our sector surpluses and deficits. For corporations perhaps 2 of the 5 will be financed by increased inside funds and the remaining 3 by an increased deficit. If so, other sectors must increase their surpluses by 3 and we will assume this increase concentrated with consumers. For the moment we hold unchanged the increment in the quantity of money. What happens to financial markets in the model?

The corporate fixed investment increase of 5 involves a step-up in net security issues of, let us say, 2.[3] But since the corporate deficit rose 3, corporations will obtain an additional billion of funds by liquidation (or reduced acquisition) of federal obligations. So 3 billion in capital market securities must be absorbed by consumers and insurance, since banks and the federal government are not affected. Perhaps .8 is taken by the insurance sector—being accompanied by an equal step-down in insurance mortgage acquisitions—and 2.2 taken by consumers. But in

[2] The insurance sector budget and the insurance mortgage lending equation combine to form this function for the insurance sector.

[3] The figures used are for illustrative purposes only and are obtained from the formulation of behavior equations on Exhibit I derived from Appendix A. The numerical values for flows are in billions of dollars.

the process the average interest rate rises .4 per cent. The rate differential will also have to adjust to favor the corporate securities enough for 2 of these securities to be absorbed by consumers and insurance as against only 1 of the federal obligations. Finally, the reduced flow of mortgage credit to consumers will reduce their housing expenditures a roughly equal amount. The increase in the consumer surplus of 3 assumed at the start goes into a 2.2 increase in capital market security acquisitions and a reduction in mortgage borrowing of .8.

But suppose the monetary authorities had allowed a larger increment in the quantity of money? Since this type of boom involves no increased demand for bank loans, further bank credit expansion would be via the acquisition of federal obligations. Added purchases of 3, for example, would enable banks to purchase the billion liquidated or turned away by corporations plus 2 more in addition. There would now be no increase in the total capital market securities to be absorbed by consumers and insurance, who must absorb 2 more in corporate securities but 2 less in federal obligations, the latter going to banks. So the average rate does not rise, although the rate differential rises in order to favor the absorption of the corporates. For the capital market as a whole, instead of consumers and insurance acquiring additional capital market securities at higher rates, banks absorb them and consumers advance the funds to banks by absorbing additional cash. Since the insurance sector does not step up its acquisition of capital market securities, the insurance flow into mortgages is maintained. We may say that the effect of the easier money policy during this boom is to ease both the mortgage market (the flow of mortgage credit being maintained) and the capital market (the average interest rate not rising). But tightness remains in the corporate security portion of the capital market judging by the rate differential.

A second force influencing the financial effects of a boom in the model is the operation of the income circuit as reflected in the sector surpluses and deficits. In the case of the corporate fixed investment boom, if, instead of a corporate deficit increase of 3 and corresponding consumer surplus increase of 3, there is no change in any sector's surplus or deficit, the financial effects of the boom are rather different. The fixed investment increase of 5 still causes corporate security issues to increase 2, but with no change in the corporate deficit, corporations at the same time absorb additional federal obligations of 2. There is no over-all increase in capital market securities that consumers and insurance must absorb. Although the rate differential rises, the boom does not tighten the capital market as a whole—the average interest rate does not rise—and the flow of mortgage funds to consumers is

maintained. When corporations or the federal government can absorb additional federal obligations because of reduced deficits, the capital market is eased just as it is when banks are enabled to do so by an easing of monetary policy.

A brief contrast may be made with other types of booms. Consider a corporate inventory investment increase of 5. Let us retain the same original assumptions of a growth in the corporate deficit of 3 billion and a constant increment to the quantity of money. The increased inventory investment of 5 will lead to a step-up in bank borrowing of, say, 4 billion—more nearly dollar for dollar than in the case of fixed investment—which will force banks to reduce acquisitions of federal obligations by 4. Corporations, on the other hand, borrowing 4 more in bank loans and only having a deficit increase of 3, will add a billion to their acquisitions of federal obligations. So the capital market is faced with absorbing only 3 of the 4 liquidated or turned away by banks. The results for the capital market as a whole are identical with the fixed investment case (average interest rate rising by .4 per cent, etc.). But since the inventory boom involves placing only added federal obligations and not corporate securities, the rate differential will narrow.

A consumer durable boom is similar to an inventory boom in that the effect on financial markets comes via banks and their increased liquidation or reduced acquisition of federal obligations. But a consumer durable boom of 5 billion would involve stepped-up bank borrowing by consumers (both directly and via financing firms) of perhaps only a billion. In such circumstances the income circuit effect of the durable expenditures on sector deficits and surpluses is likely to influence financial markets more strongly than the consumer borrowing itself.

The model can also be used to trace the impact of federal fiscal policy on financial markets. We could, for example, demonstrate that the financial effects of increasing the federal deficit depend importantly on which sector absorbs the additional federal issues. But we must conclude.

Our model analysis might be summarized as follows. Corporate and consumer expenditure booms which are not accompanied by increased bank credit expansion will result in a tightening of financial markets in the model. In the capital market this tightening takes the form of an increased average interest rate accompanied by an increased flow of funds through this market as a whole. In the model's mortgage market this tightening is reflected in a reduced flow of funds passing through the mortgage market to consumers.

But various types of expenditure booms in the model do affect financial markets differently. The corporate fixed investment boom has its

main impact on the flow through the corporate security market, and while corporations may also obtain funds from federal obligations, the corporate rate may well rise relative to the federal obligation rate to favor the absorption of the additional corporate security issues. On the other hand, the effects of a corporate inventory or consumer durable boom are concentrated via banks in the federal obligation market and the rate differential will narrow to favor the absorption of federal obligations. Further, the financial tightening during a consumer durable boom of a given dollar size is milder and less certain than for either type of corporate boom.

The financial behavior of the model during these booms can be affected in two ways. The first is by changing the monetary policy. If the increment in the money supply is allowed to expand, such an easy money policy will ease the federal obligation market, the capital market as a whole, and the mortgage market. Banks, as a result of the increased expansion, step up their role as financial intermediaries, advancing additional funds via loans or federal obligations and obtaining additional funds from consumers who are acquiring more cash. In general, the effects of a tight money policy would be in the opposite direction, adding to the financial tightness caused by the boom itself. Because monetary policy has its immediate impact on the federal obligation market and can affect the corporate security market only indirectly, the monetary authorities in the model are better able to cope with an inventory or consumer durable boom than with a fixed investment boom.

Secondly, the model's financial behavior is importantly affected by the income circuit adjustment of sector deficits and surpluses. To the extent that these adjustments reduce the net flow of saving required to pass through financial channels from consumers and insurance to corporations or the federal government, financial markets in the model will not be as tight during expenditure booms.

This model analysis has focused on the impact of monetary policy and fluctuations in the goods and services markets on the financial mechanism. Our conclusions are not very novel. But the model does attempt to specify the mechanics by which these forces work themselves out in the various financial markets. Such an approach may be a first step toward a fuller analysis directed at how monetary policy affects the economy as a whole including nonfinancial markets and ultimately the GNP. If the model is on the right track it can be varied and elaborated in numerous ways.[4]

[4] For example, bank mortgage acquisitions and corporate cash balance increments could be brought into the model. Also, more of the nonfinancial variables could be made endogenous. Such steps increase the simultaneity of the model and hence its mathematical

We hope that this approach will look promising enough to encourage its further development. This kind of model could be useful, for example, in exploring the financial implications of a particular GNP-projection. On the other hand, it should be clear that we have been discussing an unverified and partly unspecified model. One would be rash indeed to use it as the basis for formulating a real world policy.

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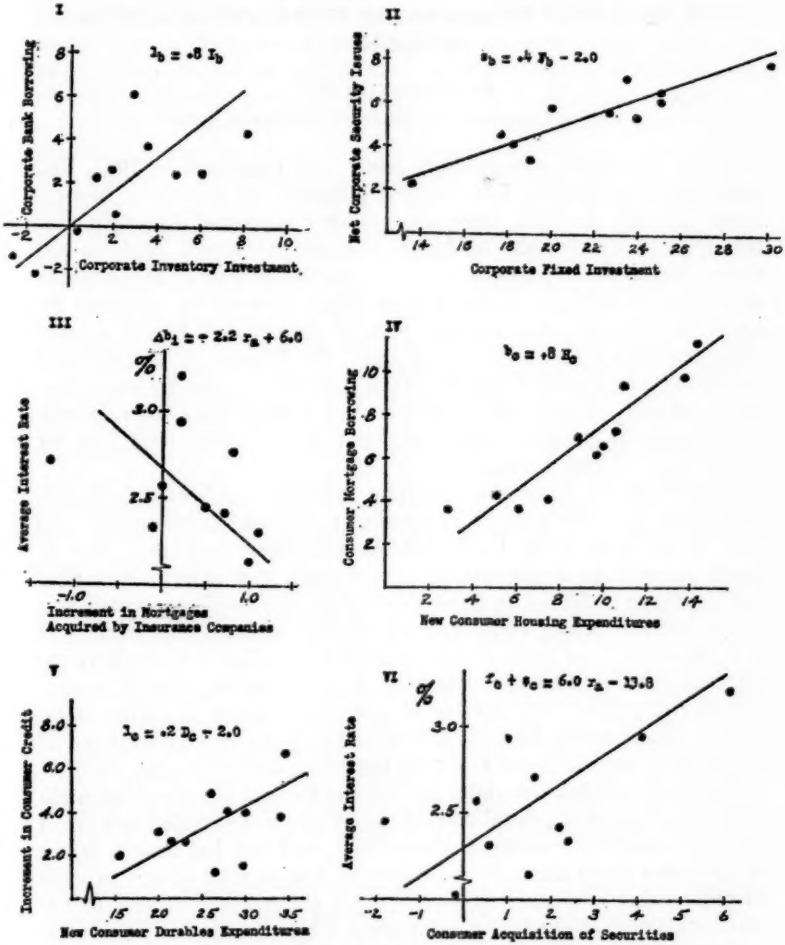
complexity. Taking account of bank credit rationing and the effects of mortgage lending terms on their respective markets is another possibility. And, of course, there is room for variation in the sectors and transaction types used. The subsector models would be useful individually in more elaborate form even if it were not possible to integrate them formally.

APPENDIX A

Derivation of Illustrative Behavior Equations*



*Note: For sources, see Exhibit I. All charts show annual data 1946-56. Figures are in billions of dollars unless otherwise indicated. The lines are arbitrarily placed on the scatter diagrams.

AN ANALYTIC SUMMARY OF THE FLOW-OF-FUNDS ACCOUNTS

By STEPHEN TAYLOR
Board of Governors of the Federal Reserve System

When Copeland's money-flows study was published in 1952, and later when the Federal Reserve first published its system of flow-of-funds accounts in 1955, there was a widely expressed sentiment that this type of data should be highly relevant to current analysis and theoretical work in economics. Here, combined into a single closed matrix of balancing accounts, are the basic elements of consumer income and expenditures, business sources and uses of funds, government operations and debt management, the balance of international payments, and banking and monetary statistics. It was apparent that any statistical system that embraced such a broad body of economic information in consistent form ought to be a fundamental tool for future work in macroeconomics.

Paralleling this hospitable reception, however, has been a feeling of bafflement as to the uses to be made of the flow-of-funds system and how to put it to work. Unlike income-and-product accounts, flow of funds presents no single total or set of totals that either summarizes the system or indicates its orientation. Flow of funds is presented as a matrix of interlocking sector and transaction accounts that balance in two directions. The form of presentation emphasizes the simultaneous interrelationship of all forces at work in the economy, without suggestion of cause-effect directions or of over-all measures of performance. That is, none of the individual transaction types or combinations of transactions are presented as having paramout significance for analysis.

This almost blank neutrality reflects the Federal Reserve's intention of presenting a very general body of data that can be applied to a broad range of analytic problems. But the result, as I say, has been a degree of confusion about the uses of the system. The purpose of this paper is to reduce that confusion by presenting a summarized version of the accounts aimed at one major application. This summary is frankly experimental and represents my own view of the focus of the accounts. Other people may see the system quite differently, and I would not pretend that the version given here reflects any consensus on flow-of-funds analysis. The area is too broad and too new to have produced established doctrine.

The primary use of flow of funds, as I see it, is the study of short-

run fluctuations in business conditions—their causes, character, and effects. This is macroanalysis, concerned with the structure of simultaneous relationships present in the economy, and it is here that we can use the flow-of-funds structure most effectively as a unified system. In comparison with income and product accounts, the fundamental contribution of flow of funds for short-run analysis has been integration of financial data into the picture on a basis consistent with the nonfinancial information. Hence the principal applications of flow-of-funds accounts should be in problems of interrelationships between financial and nonfinancial conditions in the economy, such as studies in the incidence of monetary policy and short-run projections of financial markets.

The basic problem in applying flow of funds to short-run analysis appears to be that theory is still fairly primitive on the interworkings of financial and nonfinancial markets. We have quantity theory and the liquidity preference-loanable funds complex, and we have recently had some consideration of the effects of financial intermediaries. We have also had much discussion of the effects of interest rates on saving and spending, of many aspects of debt management, and of portfolio policy in individual sectors of the economy. What we do not have is a coherent integration of these many ideas. In this state of the art, the flow-of-funds accounts represent a volume of organized data that is almost embarrassing.

There is no question but that we are at the beginning of some active work on a sophisticated synthesis of financial and nonfinancial theory in flow-of-funds form. There are projects underway on this problem in a number of countries. The ideal result of such work would be a concise system of behavior equations that distinguishes clearly between the important and the unimportant in flows and relationships. A few years of experiment in this direction will, I expect, produce substantial advances toward systematic flow-of-funds analysis. Certain standard approaches will probably gain general acceptance, and the amount of detail that can be handled practicably will probably be enlarged.

At present, however, the major uses of flow of funds as a unified system are in short-run projections of the cut-and-paste tradition, where the structure provides the constraint that everything balance, and in studies of recent history. In viewing both the past and the future through flow of funds, analysis is still largely informal and to an extent improvised. For this work there is much detail that can be condensed and summarized in order to bring out the main relationships. In this paper I reduce the system to two transaction accounts—one for nonfinancial markets and the other for financial markets—that are in-

tended to serve this purpose. They represent an extreme condensation, and any substantive study must look into the underlying detail, but they provide a useful starting point for analysis at the present time.

Nonfinancial Transactions

In its most detailed published form, the flow-of-funds matrix contains separate accounts for twelve types of nonfinancial transactions—payroll, rent, etc. These accounts show payments and receipts of every sector with respect to the specified transactions. Each of the accounts balances in that total payments by all sectors equal total receipts except where there are statistical discrepancies. Nonfinancial accounts measure gross volumes of transactions in goods and services, taxes, transfers, and insurance, and since intermediate business transactions are included, their total flow is currently running over 1.5 trillion dollars annually.

The principal difficulty in using the nonfinancial accounts, as I have indicated, has been that they do not add up to quantities of the type used in most macroanalysis—income, consumption, investment, saving. Detailed presentations of the system have included a number of tables relating flow-of-funds figures to major GNP components in the Department of Commerce accounts, but there are many purposes for which these reconciliation statements are awkward to use. These statements have had their principal use in full-scale projections covering both GNP and financial flows in consistent fashion. In other forms of projection, in model design, and in historical analysis, flow-of-funds analysis can be facilitated by recasting the nonfinancial accounts directly into an income-and-product form that is analogous to, although not identical with, the Commerce accounts.

This can be done fairly easily from the published flow-of-funds figures. As in national-income accounting, it requires an appropriate combination and netting of individual items. The effect of this regrouping is to convert the twelve nonfinancial transaction accounts into a single account for all nonfinancial transactions together. It also washes out the trillion dollars or more of intermediate transactions. Whether these are significant losses depends on the question pursued and the theoretical focus of analysis. What is gained is a set of quantities that are directly relevant to income analysis and to financial analysis at the same time.

The single transaction account I have in mind is presented in summary form in Table 1 for seven sector groupings. For analysis it needs detail such as inventory movements and consumer durables, but in even this brief form the table shows several strategic quantities simultaneously: final-product spending, the ultimate distribution of receipts

TABLE 1

SUMMARY OF NATIONAL RECEIPTS AND EXPENDITURES
1954–56
(Billions of dollars)

	1954	1955	1956		1954	1955	1956
Receipts	336.0	365.4	387.9	*Final-product expenditures*	336.0	365.4	387.9
A. Consumer disposable receipts	239.4	256.7	274.6	*a.* Consumer current outlays	219.7	237.5	248.7
B. Business current surplus	20.7	29.4	24.3	*b.* Private investment	44.5	55.9	60.9
C. Government net current receipts	68.7	71.3	81.5	*c.* Consumer	12.6	16.7	15.9
D. Federal	46.0	46.7	54.9	*d.* Business	29.3	36.6	42.2
E. State and local	22.7	24.6	26.6	*e.* Nonprofit organizations	2.6	2.7	2.8
F. Finance nonfinancial surplus	6.0	5.8	6.2	*f.* Government expenditures	72.3	72.6	76.9
G. Nonprofit organizations current surplus	1.6	1.5	1.3	*g.* Federal	48.1	46.0	47.8
H. Discrepancy	−.4	.7	—	*h.* State and local	24.2	26.6	29.1
				i. Net export surplus	−.4	−.5	1.4

Details may not add to totals because of rounding.

NOTES TO TABLE 1

The data presented in this paper depart from published flow-of-funds accounts in certain sectoring and transaction treatments. The principal sectoring difference is a transfer of credit agencies other than banks (e.g., sales finance companies) and security brokers and dealers from business sectors to the financial group. In transactions the most important difference is the treatment of life insurance policy reserves as a consumer financial asset; net consumer outlay for life insurance (in line *a*) is premiums paid less benefits received and less growth in policy reserves. These treatments are being considered for use in the structure of quarterly accounts currently being developed.

Line

A. All nonfinancial receipts of consumers, other than from sale of property and from certain insurance benefits, less income taxes, employment taxes, and contributions to pension plans.

B. Operating receipts less operating uses, profit tax payments, dividends paid, and net withdrawals by proprietors. This is equivalent to capital consumption allowances plus retained earnings.

C, D, E. Receipts less payments in taxes, tax refunds, interest, insurance premiums and benefits, and grants and donations.

F. Total receipts less total payments in nonfinancial accounts of banks, credit agencies other than banks, insurance companies, private pension funds, savings and loan associations, credit unions, investment companies, and security brokers and dealers.

G. Total receipts less payments on current account in nonfinancial accounts.

a. Durables, nondurables, services, property taxes, donations, and net cost of insurance other than pensions. Net of sale of durables.

c. Consumer purchases less sales in residential housing.

d, e. As published.

f, g, h. Payments less receipts in payroll, rents, real estate transfers, and "other goods and services."

i. Total payments less total receipts in rest-of-world sector nonfinancial accounts.

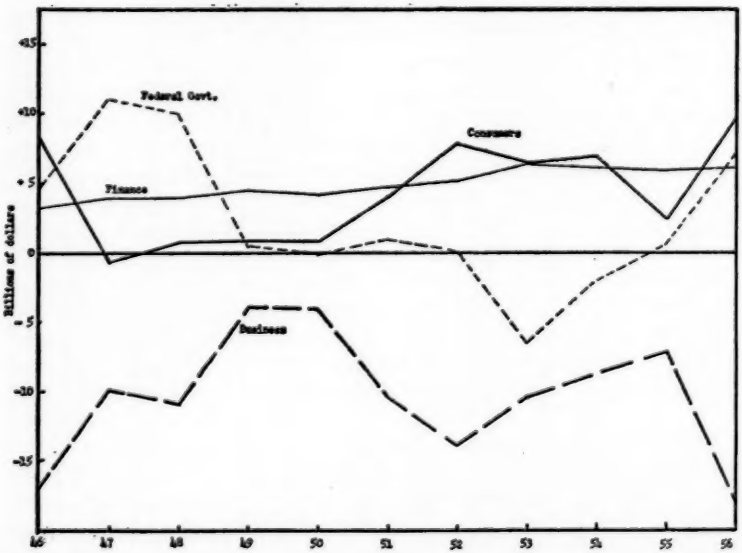
from this spending, total investment, and (with netting for consumers and governments) the saving that finances this investment. The table shows these items for individual sectors and for the economy as a whole.

And finally, if each sector's expenditures are deducted from its receipts in Table 1, the result is a net nonfinancial surplus—an excess of all receipts over all payments in nonfinancial transactions. Where this surplus is positive for a sector, it necessarily represents a net advance of funds to financial markets. Correspondingly, a net nonfinancial deficit represents a net taking of funds from financial markets. In general, each surplus or deficit reflects a combination of lending and borrowing, but when there is a surplus the lending exceeds the borrowing, and with a deficit the borrowing is greater than the lending.

Chart I presents the movements of net nonfinancial surpluses since the war for major sector groups. As the chart indicates, the net surpluses always add to zero sum, except for discrepancies. This is because every receipt is also a payment; that is, we have a balanced transaction account here. Alternatively, from the financial viewpoint, there is a zero sum because borrowing is also lending. The nonfinancial surplus is thus an extreme summarization that is frequently revealing at various points in analysis as a quick picture of the shifting surplus

CHART I

NET NONFINANCIAL SURPLUS



and deficit position of sectors. However, it tells little in itself, since it gives no indication of the direction of movement of spending, incomes, or the volume of borrowing. For the significant aspects of economic fluctuations we need at least the data in Table 1 for nonfinancial activity and something comparable for financial flows.

These data have, of course, a marked resemblance to the national income-and-product accounts published by the Commerce Department. I must point out, therefore, that they are not presented here as a replacement for the existing Commerce Department system. The standard Commerce formulation has many applications in addition to short-run analysis, particularly in its constant-dollar version. It is a summary statement of activity that largely abstracts from the institutional structure of the economy. Recent proposals for modifying the Commerce accounts would make it even more independent of institutional structure.

Financial analysis, however, is inevitably focused on specific groups of people or organizations and on transactions among them. Income-and-product data, to be useful for flow of funds, must show the institutional sectoring clearly, in the form illustrated by Table 1. This is a specialized requirement that one would not attempt to impose on the more general system of accounts published by the Commerce Department. The flow-of-funds data given here can thus be viewed as a quasi-income and product structure focused specifically on financial analysis.

Since Table 1 is a flow-of-funds summary, it reflects the many differences between this system and the Commerce system as to transaction coverage and treatment. In statistical work, however, one should recognize that for many purposes the two sets of data are almost identical in movement. This is illustrated in Chart II for total expenditures; similar relationships can be shown for the major components of spending and receipts. In broad gauge analysis, therefore, a projection or model built on the ten or twelve major components of Table 1 will have implications for employment and response patterns that are virtually identical with those of existing forms of income-and-product analysis and at the same time will be integrally related to financial flows through institutional sectoring.

Financial Transactions

Table 2 is a version of the financial part of flow of funds that parallels the nonfinancial summary in Table 1. These two tables can be considered to include every flow-of-funds transaction in one form or another, and together they constitute a statement of the entire system in terms of two transaction accounts.

Table 2 is built around net borrowing by nonfinancial sectors; that

TABLE 2

SUMMARY OF FINANCIAL FLOWS OF FUNDS
1954–56
(Billions of dollars)

Net Funds Advanced to Nonfinancial Sectors	1954	1955	1956
Total	28.9	37.7	30.0
A. By financial institutions	24.5	19.7	20.3
B. From: Private money supply	3.6	2.9	1.8
C. Nonmoney deposits received	13.7	11.7	12.7
D. Other sources, net	7.1	5.2	5.8
E. By nonfinancial sectors	3.0	18.6	12.0
F. Consumers	.9	7.6	9.7
G. Business	−1.7	7.8	.6
H. State and local governments	2.9	1.9	1.7
I. Nonprofit organizations	—	—	−.1
J. Foreign	.9	1.4	.2
K. Discrepancy	1.4	−.7	−2.3

Net Funds Raised by Nonfinancial Sectors	1954	1955	1956
Total	28.9	37.7	30.0
a. By: Consumers	11.8	18.7	13.3
b. Business	8.5	14.7	16.8
c. Federal government	2.4	−1.3	−7.2
d. State and local governments	4.4	3.7	3.4
e. Nonprofit organizations	.1	.5	.2
f. Foreign	1.5	1.5	3.6

Details may not add to totals because of rounding.

NOTES TO TABLE 2

Finance sector coverage is listed in the description of Line *F* in Table 1. These institutions are presented here on a consolidated basis. Line *B* is change in currency and demand deposits held by nonfinancial sectors other than the federal government. Line *C* is net growth of time deposits, other types of savings accounts, and life insurance policy reserves. Line *D* is mainly change in federal cash holdings plus net current saving by financial intermediaries. Net saving includes growth of private pension reserves.

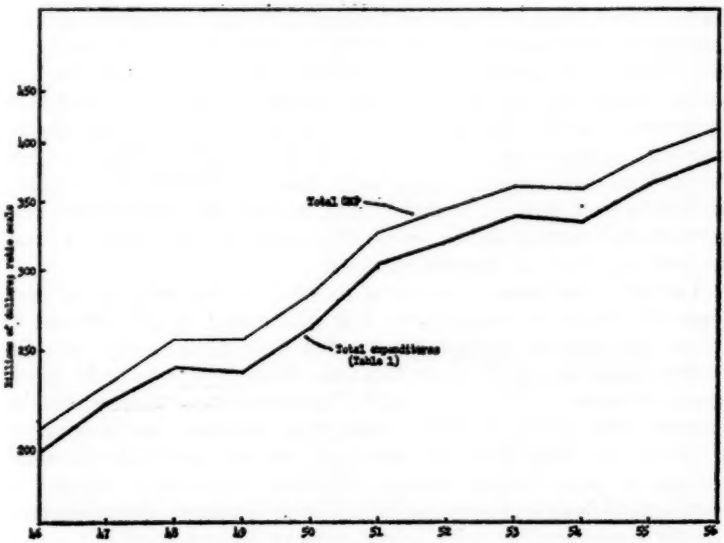
Lines *A* and *D* exclude an amount of lending equal to net issue of securities by financial institutions. Net purchases of finance securities by the finance sector are consolidated out, and net purchases by nonfinancial sectors are included in Line *E* and its sector detail.

Gold flows are included in the table as transactions in a financial asset. Net U.S. purchases of gold are included in Line *A*; they are offset in Line *J* by an equal amount, opposite in sign, representing net foreign purchases of U.S. gold.

Federal government lending does not appear on the supply side of the account; it is transferred to the demand side and deducted from federal borrowing. This lending is included, as borrowing, in the amounts shown for funds raised by other sectors.

is, the excess of their borrowing over their retirements of debt. This borrowing is interrelated with the money supply and GNP spending in several ways on both sides of the account. It is part of a continuing adjustment by the public toward preferred positions with respect to net worth, cash, other assets, and liabilities. These preferences exist in joint combinations, but they have many degrees of freedom, at least in relation to income, which is more or less exogenous to the individual. Shifts toward cash, toward other assets, toward spending and borrow-

CHART II
GNP EXPENDITURES



ing can occur in any configuration meeting the restriction that total sources of funds equal total uses for individual transactors and for the economy as a whole. The study of these changes in preference structure is at the heart of short-run macroanalysis.

The existence of financial intermediaries has a major influence on the type of adjustments that the public makes, but intermediaries do not engage directly in this adjustment process themselves. In terms of the summary categories of Tables 1 and 2, they have little discretion with respect to either their sources or uses of funds, since their policy is to raise as much money as they can and put it almost entirely into loans and securities. The effect of intermediaries is to facilitate flows

of funds from lenders to borrowers and in this way to increase the volume of loans and securities that the economy will buy relative to the money supply. This is an important effect and intermediaries must be recognized in even the most summary financial analyses. But they should be recognized as an influence on the equilibrating process rather than as participants in it.

Table 2 reflects this view of finance. This table is a specialized statement intended to present the main financial results of the adjustment process mentioned above; the data treatments described in footnotes reflect this purpose. On the supply, or funds advanced, side of the account the flow is divided into two types: the part coming directly from lenders in nonfinancial sectors and the part coming from intermediaries. Lending by intermediaries is attributed to three sources of intermediaries' funds, each controlled by a distinctive combination of forces. The money supply and the third, residual, source are effectively exogenous to financial markets in the short run, in the sense that they do not represent ordinary market responses to prices and alternatives. The flow into savings deposits, on the other hand, is decided by the public on the basis of income, financial position, spending propensities, and several other factors. It is a source of funds to be "explained" by any analytic construct of financial markets.

The other endogenous element of supply is direct advances by nonfinancial sectors. As an aggregate it is determined by the same set of forces that controls savings deposits, but these forces carry very different weights in respect to the two flows. In general, we should expect direct advances to be more sensitive to interest rate movements, for example, than savings deposits, since direct advances are more an instrument for large investors who can respond profitably to small changes in rates. Savings deposits are likely to be more affected by nonfinancial flows and cash holdings of small investors. But these relationships need further study before one can become specific.

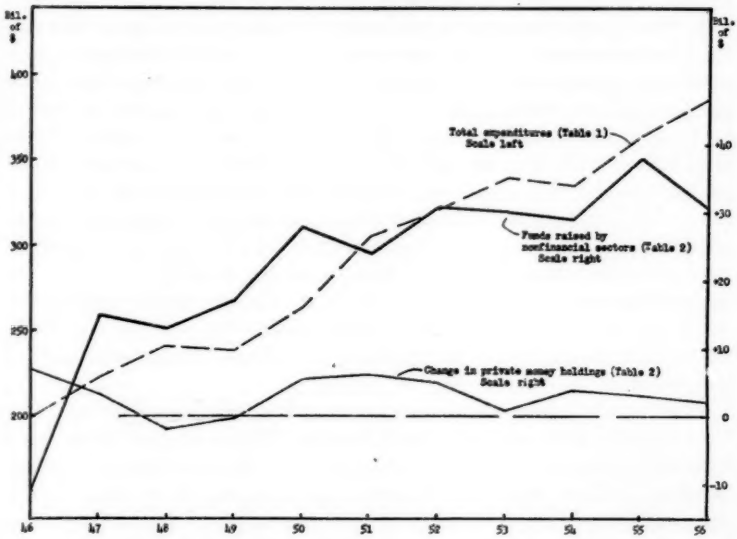
The total flow in Table 2 (that is, net borrowing by all nonfinancial sectors) should in normal circumstances move more or less in parallel with GNP. This is partly because the types of spending that generate GNP movements usually have borrowing associated with them, but it is also because higher levels of income should increase the public's willingness to borrow.

This is, however, a very simplified picture. It leaves out of account, for example, the influence of asset and debt levels on borrowing and lending propensities. These financial balances are the consequences of GNP movements and financial flows in preceding years and in effect bring complex lagged relationships into force. Also, we are dealing with an economy of quite shiftable preference schedules, and with the vari-

ety of combined shifts that is available, it is not difficult to imagine alternative situations in which a rise in GNP is associated with either a rise or fall in total borrowing and with either easy or tight money conditions.

The relation of borrowing to GNP (Table 1 version) and money is illustrated for the last decade in Chart III. Some degree of interrelation can be seen here between borrowing, GNP, and money, but there are

CHART III
FUNDS RAISED, GNP, AND MONEY



many deviations. In certain years—notably 1951, 1952, and 1956—the correlation breaks down completely. Both 1951 and 1952 can be explained largely in terms of federal finance and consumer credit regulation. The year 1956 is a more complex and more interesting case, since it presents almost textbook conditions for study of monetary management.

Borrowing fell off in 1956 in spite of strong investment demand by business and a rise in total GNP spending. This decline in borrowing, plus the rise in interest rates from 1955 to 1956, indicates that the supply of funds to loan markets was cut back by a sizable amount from 1955 to 1956. Table 2 shows that the major drop in lending was in business sectors. Business played a relatively passive role in the consumer spending boom of 1955, as movement of its nonfinancial surplus

in Chart I indicates, and business advances to loan markets were high during that year. In 1956, however, business shifted heavily toward capital spending at the same time that its retained earnings were decreasing, and this combination produced a large nonfinancial deficit to be met from financial sources. With loan markets tight in 1956 and with a fairly liquid position from 1955 operations, business chose to finance a large part of this deficit by selling security assets rather than by borrowing. This was evidently the main reason for the 7 billion dollar drop in business lending from 1955 to 1956 and for the relatively mild increase in business borrowing.

Taken together, the drop in business lending and rise in business borrowing exerted a strong pressure in 1956 toward higher interest rates and tighter financial markets. The pressure was intensified by a parallel shift in the foreign sector toward less lending and increased borrowing. At the same time, however, there was a 10 billion dollar drop in federal borrowing and consumer short-term borrowing that offset most of the rise in business and foreign demand, at least quantitatively. Since federal demand for funds is insensitive to financial market conditions, and since consumer credit was available on normal terms in 1956, this 10 billion dollar drop in borrowing cannot be viewed to any major degree as a reaction to or result of the increased business demand for funds. It was, rather, a pressure toward ease largely imposed on markets in opposition to the business and foreign pressure toward tightness.

Thus in these four types of demand taken together—business, foreign, federal, and consumer credit—there appears to have been some increase in demand over 1955, but an increase that was relatively small, roughly 2 billion dollars. With restrictions on growth of bank credit, this 2 billion dollar demand increment was imposed primarily on the consumer sector, which was the residual supplier of funds to loan markets under 1956 conditions. And the rise in interest rates that occurred from 1955 to 1956 was presumably the amount needed to draw the extra consumer funds into loan markets to meet these demands. In the process, consumer mortgage borrowing appears to have been restricted somewhat, while state and local government demand for funds was stable and largely unaffected by the tightness.

The extent of the interest rate rise indicates that consumer lending had a low elasticity with respect to interest rates in 1956. While consumers bought securities in unprecedented amounts during the year, the increment over 1955 was not large, at least compared to the 1954-55 rise in consumer lending. Moreover, the net flow from the consumer sector in 1956 was not enough to cause any substantial change in con-

sumers' financial position—the relation of security holdings to cash or to total assets and the relation to income of total assets, total net worth, financial assets, or financial net worth.[1]

This implies a very limited flexibility to consumer portfolio policy during the year. It may, of course, be inertia rather than rigidity that we see here, and 1957 data should be helpful, when they become available, in showing whether consumers responded with a lag to 1956 levels of interest rates. Another possibility, however, is that the low elasticity reflected a strong investor preference for common stocks, based perhaps on the performance of stock prices in 1954 and 1955. The net flow of consumer funds into stocks was at a postwar high in 1956 and almost double the 1955 rate. Such a large absorption of funds might be expected to depress the market, but in spite of this pressure, stock yields and prices maintained a fair degree of stability during 1956, indicating a sentiment in favor of stocks that debt securities could compete with only by a further increase in yields beyond 1955 levels. This situation would not be inconsistent with the observed stability in consumers' financial position during the year.

Even in broadest outline, the 1956 situation illustrates the need in flow-of-funds study for detail underlying summary accounts and for balance-sheet information. It also illustrates the importance with the sector account. Many of the important behavioral relationships in financial analysis are among transactions within a sector account rather than among sectors in a transaction account, and no flow-of-funds structure is complete that does not allow for the sector view of things.

As shown here, the two transaction accounts in Tables 1 and 2 are deficient in this respect, since (most importantly) they do not show sector holdings of the money supply and savings deposits. These items have been omitted to keep Table 2 short; they can be viewed either as detail to be added to the table or alternatively as a third transaction account. Given that information the data in these two tables can be recombined into rudimentary statements for seven sectors. These sector statements can then of course be elaborated with detail in varying ways that focus each statement on the peculiar nature of its sector. There is no need to keep a homogeneous form here, so long as it is possible to identify the market (transaction account) where each transaction takes place.

The flow-of-funds statement in two accounts that I am suggesting

[1] In order to examine this systematically, however, we should split the consumer sector into one subsector for large investors and another subsector for small investors. The data to make this split are and have always been one of our major needs for improving the accounts.

here should be viewed as no more than a starting point for exploring flow-of-funds data. It has, or could have, a formal neatness that allows one to grasp the major flows in the economy by a fairly casual reading and to interrelate them to some extent. The detail in the tables is almost never sufficient in itself to explain the movements of a period, but in most cases it points to the sectors and transactions that need further examination. These are modest virtues, but in the present inchoate state of flow-of-funds analysis, they take on a disproportionate importance.

DISCUSSION

ALAN GREENSPAN: Taylor is right in pointing out that the basic problem in handling flow-of-funds accounts is the primitiveness of our financial theory. These accounts are extremely elaborate and extraordinarily well constructed. But unless we know what we want to use them for, they are of as much practical value as a table of random numbers. Certainly these two papers are a step in the right direction.

Dawson's paper is, of course, an attempt to set up a systematic closed financial model. What I find most interesting about this model is the hypothesis of a chain of cause and effect in financial markets rather than a set of simultaneously determined variables. I suspect he is right here and, if so, this is an important clue to the handling of flow-of-funds data. Money flows appear to be initiated essentially on the demand side, with the major constraint being adequacy of bank reserves and minor constraints deriving from the existence of such artificial market factors as fixed interest-bearing government underwritten mortgages. However, Dawson's particular choice of variables has given him relatively poor correlations and, as it stands, I doubt the efficiency of this particular model. I think considerable improvement could be made. In the first place, corporate inventory investment and bank borrowing should show a higher correlation than he gets. I do not quite see the point of using inventory investment after valuation adjustment, as has apparently been done here. Industry-by-industry data are now available for bank borrowing and show quite high correlations with comparable inventory book values. Security market bank borrowing should be handled separately. And sales finance company loans should be linked with finance company paper and correlated with auto sales. Similarly, the corporate security-issue–fixed-investment correlation could probably be improved by weighting industry data. Heavier weights can be given to a dollar of public utility investment than to, say, a dollar of commercial construction.

I am also somewhat puzzled by the use of an interest rate based on an average of Treasury bills and long-term governments, on the one hand, and long-term corporates, on the other. Why not just an average of the long-term issues or an equal weighting of the long and short end of the bond yield lists? Variations in the shape of the interest rate curve are being implicitly picked up in this computation. Further, I doubt that differences between yields on governments and corporates are basically the result of differential supply and demand, as suggested here. It appears more likely that these differences should be looked upon as risk premiums and over-all indicators of the degree of confidence which investors have in the business outlook. I suspect that the so-called "institutional" impediments to funds flows are less than we imagine and divergent supplies of governments and corporates are readily absorbed without significant effects on the yield premiums.

I think a considerable improvement could be made in Dawson's type of

financial model if some explicit measure of business confidence were brought into the picture. An attempt to measure financial flows strictly on the basis of real variables such as inventory investment, capital outlays, and homebuilding is going to catch us off base in periods of rapidly changing business and consumer psychology. In periods of high confidence there is a tendency for existing capital assets to be monetized as consumers and businessmen both attempt to pyramid on thin equities. There is a definite tendency, for example, for new mortgage debt on existing homes to fluctuate with the stock market, wholly aside from the trend of housing turnover. A similar pattern evidently shows up in personal loans, although the evidence here is less clear. This is not to say that consumer and mortgage debt finance the stock market, but rather that the same over-all optimism in the future which buoys up stock prices induces borrowing and spending. A closer fit between new home purchases and mortgage debt could be obtained if this component of old home debt were separated out, and perhaps joined with security market bank loans, and both made to depend on stock prices.

While Taylor has not set up a rigorous numerical model, he is imposing theoretical constraints on the flow-of-funds figures. I agree essentially with Taylor's estimate of his own model, but until it is tested in more detail it is hard to say how useful it will ultimately turn out to be. As Taylor maintains, his consolidation washes out 1 trillion dollars in intermediate transactions and, short of a hypothesis to be tested, no standard of significance of this washout is available.

I wish Taylor had attempted to allocate his statistical discrepancy. In the tables presented here, the discrepancy looks small. But if we look at the full set of flow-of-funds accounts in the context of Commerce's national accounts, certain glaring gaps emerge. First, flow of funds is not a fully closed system in itself. There is a conglomerate set of discrepancy and unallocated accounts which do not appear random. Second, when we attempt to link flow of funds into the savings-investment account of the national accounts, certain other systematic discrepancies appear. In final summary, most of these discrepancies are offsetting, but if flow of funds is to be useful it must be applicable to the detail of financial markets as well as to the aggregate.

The discrepancies can be closed in several ways. One is based on the assumption that unincorporated business income is consistently underestimated in the national accounts and that this accounts for the statistical discrepancy in the national accounts. Since consumer expenditures are accepted as correct, personal savings are also too low. And the underestimation of personal savings appears to be about the same dimensions as the consistent corporate section discrepancy in flow of funds (excess of uses).

An analysis of Statistics of Income balance-sheet items indicates an undercoverage in net corporate security issues—probably from the SEC's failure to cover adequately small issues. If we add this item to the source side of the corporate sector and to the net change in equity of the consumer sector, i.e., personal savings, the major discrepancies can be logically closed. There are other minor adjustments which should be made, such as closing the discrepancy in the trade credit account with mail float offsets and adjust-

ing Commerce's consumer expenditures on autos to the flow-of-funds basis.

Finally, I had hoped that both Dawson and Taylor would bring balance-sheet items more explicitly into their systems. I disagree with Taylor's statement that there was no significant change in consumers' liquidity position in 1956. Our numbers show a declining ratio of cash to security holdings through 1956 and 1957. In fact, for the economy as a whole, the ratio of cash to securities declined during the last three years—a period when interest rates were rising. This is apparently no accident. We computed the ratio of money supply to primary securities (in the Gurley-Shaw sense) and plotted it against high-grade corporate bond yields for the selected end of year dates between 1870 and 1952, for which Goldsmith's data are available. The correlation was surprisingly good. We then linked in comparable flow-of-funds data for the period 1953 to 1956, with an estimate for 1957. The scatter of points moved right up the regression curve, with the 1957 plotting lying close to those of 1900 and 1912. In fact, the regression curve is traced several times by observations moving up and down it.

This, incidentally, suggests that there has been no long-term drift in the interest rates required to induce ultimate savers to hold certain fixed proportions of cash to securities; i.e., liquidity preference, in the long run, appears stable.

A further implication of this type of interest rate function is that it "explains" the often observed tendency for stock and bond prices to move in opposite directions. Since primary securities are at market value, an increase in stock prices, money supply held constant, will cause a fall in the money supply/primary securities ratio which, in turn, will induce a rise in interest rates.

This explanation of interest rate movements is, of course, not inconsistent with Dawson's model, since he has interest rates primarily determined at the end of his chain of cause and effect by security purchases of consumers. Since consumer security purchases move with the ratio of changes in cash holdings/security purchases, this is equivalent to some sort of liquidity preference schedule. However, I suspect that a model which successfully accounts for capital market flows and interest rates will have to be more closely tied to balance-sheet items than either the Taylor or Dawson approach.

Paul B. Simpson: The money-flow data provide information primarily on money transactions and on borrowing and lending. This factual information does not have the direct significance that figures on final demand, prices, production, and employment have. These latter bear directly on welfare matters and can be analyzed for their own sakes. Monetary behavior, however, is of less direct significance. Its importance is indirect, contributory, but not final. We cannot expect money-flow data to have the same appeal as other economic measures. We must marry it with analytical theory and wait for fruitful developments. We see the beginnings of these in these papers.

In the two papers, the analysis concerns borrowing and lending. The other chief ingredient of money-flows is neglected. This is the transaction data. Mr. Dawson uses nonfinancial flow variables as chiefly exogenous variables, but

he takes care to make them representative of consumption and investment, not of monetary behavior. In a similar fashion, Mr. Taylor squeezes out monetary transactions in favor of gross national product categories. This neglect is curious. Total money-flows account for about 75-90 per cent of debits to demand accounts reported in the latest Federal Reserve debit series, varying by years. Thus they account for a large share but far from all of money transactions. These facts tend to support the Keynesian hypothesis of an important volatile reservoir of money. Moreover, we have a means of studying its behavior. Many other theoretical notions of monetary theory, such as velocity of money in the production process, can be studied with the money-flow data.

Mr. Taylor has searched the data for the light which borrowing aggregates may shed upon fluctuations in economic activity. High borrowing tends to accompany high production and inversely, but the relation suggested in Chart III is not linear, and in some years, notably in 1956, borrowing was surprisingly low. Moreover, the composition of borrowing by sectors is very unstable.

These results have theoretical significance. It is apparent from Table 2 of the paper that consumers were the largest borrowers among sectors in 1955. On a net basis, only business was a large borrower, but on a gross basis the consumers were ahead by a score of 18.9 to 14.7. This certainly suggests that time preference is a fundamental element of financial markets, and though the classical formulation may be wrong in insisting upon the role of interest rates as an equilibrating factor and in neglecting income variations, a primary role of time preference in interest rate determination seems apparent.

Mr. Taylor's findings bear upon the question of the stability of the Keynesian schedules of consumption and of marginal efficiency of capital. Although Keynes's formulation was in terms of savings and investment, he was actually thinking mainly of savings in the form of loan funds and investment as financed by borrowing. Thus the question of the stability of functions arises in a new testable form, in the money-flow data. Mr. Taylor's Chart I dealing with net nonfinancial surplus suggests that there is a lack of persistence in borrowing propensities and that the Keynesian system insofar as it is formulated in terms of functions which are stable in time is wrong in the borrowing-lending sense as well as the savings-investment sense. Mr. Taylor makes such a hypothesis when he asserts that "net borrowing by all nonfinancial sectors should in normal circumstances move more or less parallel with gross national product, given a constant money supply." He finds, however, that it does not hold up well. This is far from refuting the principal Keynesian ideas, however, and the testing of these ideas with the money-flow data remains to be done.

Mr. Dawson approaches the data from the opposite pole of economic thought from the empirical approach of Mr. Taylor. He formulates a simultaneous equation system which has the appearance of a Walrasian system. The appearance is deceptive, however, since the real economy is taken as exogenous for the most part, the effort being to see how the borrowing system adapts to the real economy. This system, like all of our fitted simultaneous system

models using important exogenous variables, is difficult to interpret in a behavior sense. We do not know whether supply or demand factors determine the shape of the relations. We do not know how well the relations would stand up under disaggregation.

Of the eight relations postulated by Mr. Dawson, the best statistical correlation appears to exist for corporate fixed investment and corporate security issues. The slope is about .4, indicating that corporations when investing borrow about 40 per cent of their requirements through securities. The data at least serve to refute the Marxian assumption that profits and savings are synonymous. It is doubtful that the relation holds for individual corporations, at least this commentator has had little success for large corporations. More-
synonymous. It is doubtful that the relation holds for individual corporations;
for borrowing and the extent of needs for funds for noninvestment purposes, it becomes difficult to interpret the regression curve even for an individual corporation. Still it is a beginning. We have a challenge: that of explaining a relation which appears to exist. This makes for progress.

ADDISON T. CUTLER: What is most interesting to me, and likely to others, about the Dawson and Taylor papers is their aspiration to help launch the flow-of-funds analysis into more practical workaday applications. The aim is somewhat more explicit with Taylor, but the two authors are pointing broadly in the same direction. It will be a fine day when that valuable tool of analysis, which has been constructed over the years and decades by Copeland, Brill, Sigel, and others, comes to be used in practice by the working economist; I am referring to business and financial analysts as well as to the average teacher of economics—to most of whom nowadays the flow-of-funds analysis still appears in the guise of a somewhat esoteric specialty.

Many observers have speculated as to how soon flow of funds may be as widely used and broadly understood as national income and product accounting. We can hope, but I do not think that this happy event will occur immediately after today's session. I do recall rather vividly the experiences we had with the GNP matter at our Federal Reserve Bank in the context of our regular economic briefings of our Board of Directors. Only a few years ago, it was considered rather daring to be so academic as to mention the trend of gross national product to our industrialist and banking directors. As matters have turned out, these directors now accept explanations which run in GNP terms and participate in discussions on such lines. Before this happy day can arrive in connection with flow-of-funds accounting, I suspect that the economists who are not flow-of-funds specialists—and that certainly includes myself—would be well advised to do a little more digging into the subject.

Dawson has given a cyclical model for postwar U.S. financial markets, based on flow-of-funds materials. It is clear at the start that his attempt belongs in the general category of empirical models rather than those which are purely hypothetical. That is, he is not aiming merely to chase Greek letters around in his own private game; he is concerned with real figures applying to particular periods of time, with at least a possibility of coming out with results that can be verified by other people. Nevertheless, as it stands

at present, Dr. Dawson has not yet shown us how the model actually works in practice and what results, either in the way of forecasting or in the way of explanation of previous events, can in fact be produced by the model. As he says quite frankly, it is at present an unverified and partly unspecified model. It is true that he has focused the model on a possible consideration of the impact of monetary policy on the financial mechanism; that is all to the good. There is some discussion of what might happen or what would, perhaps, happen in terms of the model, but no discussion of what did happen. The author is like a baseball pitcher who has given us a wind-up but has not yet thrown the ball; the form is good and the aim is plausible but we would like to see where the ball is going.

Nearly all of us who have ever tried to construct and operate an empirical model—and perhaps that applies to many of us here today—have had the experience that the final testing shows up the weakness in some of the original assumptions or limitations which have been adopted for the purpose of simplification. Dr. Dawson lays out his own assumptions and his choice of constants for his equations in an admirably frank manner. In one case, he says that the most recent information from flow-of-funds data shows that one of his assumptions now appears less tenable than it had previously; that is, the assumption that corporate cash increment in recent years has been small and stable, and therefore may be taken as a constant in the submodel.

I think that some of the other assumptions made by Dawson may turn out to be equally vulnerable. For example, I question the statement that as a matter of practice, insurance companies will take all the conventional mortgages they can get and that thus, so far as conventional mortgages are concerned, the role of the insurance company is not a significant operative variable. Still another assumption which is questionable in my mind is that year-to-year increments of bank lending on mortgages are constant. The 1957 experience fails to fit the model's assumption, for example. Of course, if Dawson had elected to make these items into operative variables, it is quite possible that his model would have become unmanageably complicated. But that is the dilemma of modeling. Sooner or later, it probably exacts a large cost in reduced realism in return for whatever structural benefits may be wrung from the use of the mathematical mold.

I now turn to Mr. Taylor's paper. Please do not jump to the conclusion that this is a back-scratching game because Taylor and I are both in the Federal Reserve System. As many of you know, economists of the Board of Governors of the Federal Reserve System and those of the various Federal Reserve banks feel perfectly free to criticize each other. More important is the fact that Stephen Taylor is speaking primarily as a producer of flow-of-funds materials, even though he is acutely aware of the distributive problem; on the other hand I speak as a consumer, or a potential consumer, or possibly even as a potential wholesaler of flow-of-funds accounting.

In an attempt to bring a wider usability to flow-of-funds analysis, Taylor gives a moderately drastic refocusing or reordering of the framework as it exists today. The emphasis is on a sharper, and more condensed, presentation of the relation of the nonfinancial to the strictly financial transactions. The

results seem plausible to me and rather helpful to my own thinking, although it does not carry me very far on the problem of how I am to use flow-of-funds analysis more frequently in my day-to-day work.

Let us use Taylor's paper to explore a little further the strategic problem of getting flow-of-funds analysis into the market place. Taylor propounds the problem in an interesting and candid fashion at the opening of his paper, before he launches into his materials. I think it is a helpful reminder when he emphasizes that flow-of-funds analysis, by its nature, has no over-all business score to offer in the same sense that GNP has. We need hardly expect the eager businessman to look for news as to whether the total flow of payments has scored another gain in the last accounting period. That does not mean that the game is lost; far from it.

By all odds, the most productive part of Taylor's presentation, from the standpoint of whetting the appetite for flow-of-funds analysis, is his very brief and almost offhand illustration of the practical use of flow-of-funds analysis in terms of a specific interpretation of what happened in the year 1956. For that year, he goes back and forth between the financial and nonfinancial events, using the materials of flow-of-funds analysis. This kind of striving for flashes of illumination is what we really need in much greater quantity. I wish that Taylor had done it for other years and with the posing of additional interpretative problems. If we can get enough of such partial translations, then many of us will be induced to study the mechanics of flow of funds sufficiently earnestly to be able to make our own applications. Such interpretative efforts do not need to take the form, and perhaps should not take the form, of covering the entire economy at each new venture. Selections and abstractions can be made from flow-of-funds materials, even though the underlying formulation is by nature a thoroughly balanced and thoroughly aggregative affair.

In suggesting what these two authors might have but did not choose to include within their objectives, I realize that I have been slipping into the habit groove of so many discussants at these meetings. The discussant says, in effect: This is a very fine picture of a zebra, but it does not bear a close resemblance to a giraffe, and I would rather see a picture of a giraffe. Such a tactic seems to flow almost inevitably from the great freedom in selecting self-imposed tasks which characterizes our profession of economics and which helps to explain the centrifugal character of its products.

I. ECONOMIC PROJECTIONS
II. A STATISTICAL CONTRIBUTION TO PRICE THEORY

ECONOMIC PROJECTIONS: TOOLS OF ECONOMIC ANALYSIS AND DECISION MAKING

By Gerhard Colm
National Planning Association

During the last two decades a new instrument has been added to the tool chest of the applied economist, particularly of economists who assist in the determination of business investment planning, market analysis, collective bargaining, and in the formulation of government economic and fiscal policies. This tool is long-range economic projections. They are used so widely today, here and abroad, that practical economists wonder how we could have done so long without them.

Now that the art of projections has passed through its first experimental stage, the time has come to evaluate the experiences and to identify deficiencies which require further improvement. In the discussion of these topics I can only select a few of the main issues and will avoid going into the details of statistical technique.

I. *The Nature and Purpose of Long-range Projections*

I will deal in this paper with long-range projections which cover a period of five years or longer. They are usually expressed in terms of national economic accounts and designed to measure potential growth of the economy of a country or region as a whole or of specific sectors and markets. The most frequently used short-run estimates are forecasts designed to find out the likelihood of expansion or contraction, inflation or deflation, continuing full employment or growing unemployment. In contrast, long-range projections usually assume a fairly stable price level, continued growth, and high employment. This hypothetical character of projections raises a question about their significance.

One attitude towards long-range projections is that everything about them is so hypothetical that they cannot have any real usefulness. Ely Devons, the British planning expert, compares the economists who prepare projections with the diviners of old who examined chicken entrails for advising on war and peace, when and where to hunt, and whether and whom to marry. According to him, both the modern economic adviser and the old magician help to avoid endless wrangling

where, with existing knowledge, the chances of doing right or wrong appear to be even.[1] Thus projections, according to this view, permit nothing but doing in a ritual manner what might have been done anyway.

At the other extreme is the opinion that projections and their use in economic programming have put economic policy and business management on a scientific basis. Replacing hunches by a scientifically determined optimum program should make for better management of individual enterprises and for a better operation of the economy as a whole.

I believe that there is a bit of truth and lots of exaggeration in both these views. Projections primarily organize a great many pieces of information in such a manner that an internally consistent composite picture of future economic change is obtained. Hence, the skeptics are right in maintaining that projections per se depend on the knowledge of facts which we already have. They are also justified in insisting that guesswork and risk cannot be removed from government and business decisions even if guided by projections. The enthusiasts, on the other hand, have reason to maintain that projections afford a unique method which protects against one-sided judgments. They are likewise justified in proposing that projections provide a dynamic frame of reference for decision making.

The decision-maker of the past all too often acted like an inexperienced hunter who aims at a target where it was at the time of aiming. The decision-maker who uses projections as a guide recognizes that he has to take the movements in a dynamic economy into account. Projections permit the decision-maker to relate future effects of present action to facts as they are likely to develop over time. This is the important contribution projections can make to better decision making.

For the large corporation it has become almost a necessity to obtain a method which institutionalizes and systematizes a process of decision making which in the past was more or less left to the hunches of the individual entrepreneur. Long-term projections afford such a formalized approach. Of course, in all cases the projection of future markets would be only one of the factors to be considered. Prices, costs, financial developments, and the corporation's competitive position in the industry are other factors.

Projections as a tool for the determination of business decisions, on the one hand, and of government policies, on the other, have different uses and require different interpretations.

For the business manager, projections have value only if he can

[1] Gerhard Colm, "Some Idle Reflections on Economic Projections," *Im Wirtschaft und Kultursystem* (Switzerland: Eugen Rentsch Verlag, 1955).

treat them if not as forecasts, then at least as a defensible working hypothesis. The economist who presents full employment projections as a tool for business decision-makers must be convinced that over the long run it is highly probable that the economy will actually approximate full employment conditions either through private or public actions. He must believe that in case of a depression the government is likely to adopt antidepression policies and that these antidepression policies will be effective. At least he must be convinced that planning on that basis will make less harmful errors than planning on other bases, such as an assumption of a continuously depressed economy.

For government use of projections a very different interpretation is needed. An analysis of possibly needed economic and fiscal policies requires that projections be understood as targets rather than forecasts. In that connection the maintenance of full employment cannot be assumed but must be considered as a task to be promoted. Projections can serve as a tool to detect imbalances in economic development and to examine the possible effectiveness of available policy devices for restoring or promoting balance in economic growth.

There is a third important use of economic projections which is neither exclusively for business nor for government purposes but for those concerned with the broad affairs of the nation, which includes business, labor, government, and all other private and public groups down to each individual citizen. It is a matter of general concern to see in perspective the various purposes for which resources are being allocated by private and public decisions. Considering the national objectives and the general welfare, we want to evaluate the shares of the national product which go to food, shelter, clothing, health, education, research, recreation, to national security, conservation of natural resources, to advertising, to luxuries of various kinds, and so on. A GNP breakdown by such broad categories of purposes for the recent past and projected into the future can be used as a guide for a consideration of national priorities in resource use.

II. *Experience with Long-range Projections*

Experience has shown that economists are better able to predict the development of the long-term economic potential than actual ups and downs of the business cycle. Various estimates of a full employment GNP—for example those published by the National Planning Association in 1944 and in 1952—turned out to be quite accurate.[2] The uncertainties involved in long-range projections, such as changes in hours

[2] *National Budgets for Full Employment* (NPA staff Report, Planning Pamphlets Nos. 43 and 44, National Planning Association, Apr., 1945). *The American Economy in 1960*, by Gerhard Colm, with the assistance of Marilyn Young (Planning Pamphlet No. 81, National Planning Association, Dec., 1952).

of work and output per man-hour, are much less than those involved in forecasting turning points in the business cycle.

In the light of these experiences it is understandable that business enterprises have felt justified in using this new tool. Projections have been used by business for a variety of planning purposes. The one hundred business economists who answered an NPA questionnaire listed the following principal areas for use of longer range projections: investment in plant and equipment; scheduling output levels; financial investment planning; inventory planning; location of plants and sales outlets (this latter requires regional projections which have been less developed than those of national aggregates).

We also have had a good deal of experience with the use of projections in formulation of economic and fiscal policies of the governments, here and abroad. Projections have been used for the formulation of government programs by the Council of Economic Advisers. Then, too, the Joint Economic Committee of the Congress has published long-range projections prepared by its own staff and has used them to identify problems to be met by economic policies.[3]

In connection with the analysis of needed economic policies, economic projections have been used to detect maladjustments in the course of economic development. In the case of our own NPA projections for 1960, a relationship was computed between gross investment and output which we thought would be sustainable; that is, a rate of investment which, if continued over a number of years, would lead neither to excess capacity nor excess demand. Our adjusted model for 1960 provided that outlays for domestic investment average around 13.5 per cent of the full employment GNP during the projection period. In actuality, this ratio for the years 1955 to 1957 has averaged more than 15 per cent. For someone who has confidence in the judgment embodied in the 1960 model, this suggested that the economy has been moving towards an imbalance in our economic structure which would have to be corrected sooner or later.

I do not want to suggest that on the basis of such a comparison the ratio of business investments to GNP should have been slowed down by a more restrictive policy. Perhaps we have to accept some fluctuations in investments. But such analysis did indicate the need to be prepared with policy devices for promoting the expansion of other economic activities should a contraction of investments lead to an economic slack. While economic projections may suggest the problems which policy-makers have to expect, only short-run economic analysis would throw any light on the timing when a turning point in invest-

[3] Joint Economic Committee, *Potential Economic Growth of the United States During the Next Decade* (Washington, D.C., 1954).

ments might occur. This experience suggests that long-term economic projections are one—but only one—of the tools which economic and fiscal policy-makers can use.

For many specific government investment programs, long-range projections have served similar purposes as for business investment programs. For example, economic projections have been used in connection with planning land reclamation, energy and other resource developments, river and harbor development, and the big highway programs. They also have been used in connection with the appraisal of mobilization programs and defense capabilities. In the field of foreign economic policies they were used in connection with the Marshall Plan and other foreign aid programs. Also for local (especially metropolitan) areas regional projections have been used.

Many foreign governments have been using long-range projections for the purpose of guiding their economic development programs and particularly for anticipating problems in their balance of payments. France, Canada, the Netherlands, Japan, India, Pakistan, Sweden, Israel, Puerto Rico, and many other countries have been using projections in this way. Also, international organizations, such as the OEEC and several of the UN agencies, have prepared projections to aid specific policy purposes. It is still too early to evaluate the contribution of projections to policy formulation in various countries. In some instances economic projections clearly indicated the strain that proposed development programs would put on available resources, particularly on the balance of payments. However, in many cases the policy-makers did not draw the necessary conclusions from the analysis.

In reviewing the experience of the last fifteen years, I would conclude that long-range economic projections have come to constitute a highly useful tool for economists who have to advise decision-makers in business, labor unions, and other private organizations as well as in government, on the national and international level. Since projections appear to meet a real need, economists should make increased efforts to improve the tool and the art of using it.

III. *Some Suggestions for Improvements in Long-range Projections*

In the following discussion I will deal with a few aspects in which long-range projections appear deficient and in which improvements in the technique are needed. This discussion is an outgrowth of research work at the National Planning Association under a Ford Foundation grant.[4]

The Role of Econometrics and of Judgment. Producers and users of projections feel uneasy because projections embody a great deal of

[4] Sidney Sonnenblum and Manuel Helzner are associated with me in this project.

judgment and do not meet the conventional standards of a "scientific" research tool. Therefore, attempts have been made to formulate a few basic assumptions (e.g., concerning the future size of the defense effort) but otherwise to compute the results with rigorous econometric methods. Econometric methods, broadly speaking, derive statistical relationships from past experience and apply them to the future. To some extent, all projections are based on the assumption that certain responses by the agents of production and consumption will remain relatively similar. This means that ratios which reflect business and consumer responses will change less than the absolute magnitudes of production and consumption. Nevertheless, I am skeptical of a projection which is derived simply as the result of econometric computations and which leaves no room for the exercise of judgment concerning possible changes in government measures and consumer and business behavior.

The National Planning Association has, since it began to work in this area in 1944, approached the problem of projections by computing a number of alternative models and then presenting a judgment model which was designed to combine various features of the alternative models in the most plausible fashion.

This approach recognizes that full employment in any one year and over a number of years can be achieved in more than one way. Whether it will be achieved with greater emphasis on consumption, or on investment, or on government programs depends on future government policies and on changes in the behavior of consumers and business. The judgment model incorporates an opinion—a judgment about what changes in government policies and consumer and business behavior appear plausible. However, internally consistent and economically sustainable models can differ only within relatively narrow margins, particularly if definite assumptions are made with respect to the size of the defense program.

By using a very simplified example, I will try to demonstrate the extent of the economic magnitudes which appear to be relatively determined and the margin by which future development may go in the one or the other direction. We estimate that a full employment GNP in 1965 will approximate 600 billion dollars in present prices; that is, about 160 billion above the level of 1957. This increase in production would be due in part to a projected increase in the labor force of about six million people. In addition, however, as productivity goes up, real wages and earnings per employee will also go up. We assumed, as a minimum estimate, that real wages will go up by the same annual rate as they rose during the last three decades. Additions to the labor force and increases in real wage rates combined would increase labor income by about 65 billion dollars, of which about 60 billion would be

spent on consumer goods and services. Similar estimates can be made for increases in other incomes, in business investments, and nondefense programs. Such computations would lead to the result that in 1965 a minimum additional spending of 125 billions appears to be assured if full employment is attained in that year. Each of the alternative models would have a bedrock estimate of 565 billion dollars for spending by consumer, business, and government. This means that in a 600 billion dollar economy, 35 billion additional incomes must be received and spent either by consumers, or business, or government. This 35 billion dollars can now be distributed among consumer expenditures, domestic private investments, net foreign investment, and government in a variety of combinations. For each of the alternative distribution patterns, there can then be computed the changes in tax rates, ratios of consumption and saving, rates of obsolescence for plant and equipment, and changes in government programs which would make each of the alternative models internally consistent. We thus obtain a high consumption, a high domestic investment, a high foreign investment, or a high government model.

A study of the alternative models and their implications then is used as basis for constructing a judgment model which in addition to being internally consistent also is believed most plausible in the light of all economic and political factors considered.

An effort should be made to improve the econometric ratios which go into the alternative models so that the gap to be distributed by judgment can be reduced as far as possible. Particularly troublesome areas are the relationships among increases in the GNP, gross investment in plant and equipment, the resulting net addition to capital stock, and the output per man-hour. These relationships should be analyzed, not only for the target year of the projection, but also for each of the intervening years, both assuming that the ratio between GNP and investments remains the same over the period and that this ratio is subject to cyclical fluctuations.

In spite of these and other needed improvements in the econometric technique, there will remain a substantial margin for judgment. The question here is the extent to which under given economic and social institutions sustainable economic relationships are determined by iron or rubber laws, and if by rubber laws, how much stress in various directions is compatible with balanced economic growth. Through the combination of alternative models and a decision model, these differences and their consequences can be explored.

Which Comes First, the Total or the Part. In the usual projection procedure, a full employment GNP is first computed and then broken down by major categories. This approach creates a certain dilemma.

For in computing a GNP, total projected man-hours are multiplied by an average output per man-hour. The average output per man-hour depends not only on future capital investments and technological and managerial advances but also on changes in the produced mix; e.g., on the shift in workers from relatively low productivity occupations (as agriculture) to higher productivity manufacturing and certain services. Thus a correct average productivity factor can be computed only after the developments of the component parts have been estimated, and each alternative model should have a different GNP total depending on the composition of demand and production. In this respect the previous projections, which used the same GNP total for the various models, were not fully consistent. Theoretically, the derivation of these alternative projections should be achieved through a number of iterative approximations.

We have been experimenting at the National Planning Association with a modification of this method. In place of beginning with computing a GNP total, only the total labor force and average hours of work are estimated as a first step. Next the minimum demands of consumers, government, business investment, and foreign investment (classified by broad product and services categories) are estimated on the basis of past experience. These minimum demands are then translated into employment for each industry. The difference between the employment needed in producing for these minimum demands and total projected employment gives an employment "gap" which is then used for estimating the additional potential production. This additional potential production is then allocated to various demand sectors and the alternative models are obtained in the same manner as described before. This procedure permits introducing alternative product compositions and productivity estimates on the one hand and GNP totals on the other which are internally consistent.

The Extent of Disaggregation. Business users like to have the finest possible breakdown by industry or product. They would prefer projections which show the GNP broken down to individual industries or even corporations. It must be recognized, however, that reliability tends to decrease as the classification becomes more detailed. Therefore, a recommendation by David C. Melnicoff deserves attention; namely, that the "from top down" projections should be supplemented by a "from bottom up" projection. As a matter of fact, many firms project their future markets simply by extrapolating their own sales of the past. What is needed is a reconciliation of a projection which starts from the GNP and moves down to specific branches of industry with one which starts from the individual branches of the industry and works from there upwards.

The Price Problem. Another problem which deserves attention in future projection research concerns the usual assumption that the price level remains constant. For the basic projections, this seems to be the best assumption so long as it is understood that it is adopted merely to simplify the measurement of production and consumption. However, for many purposes such as financial investment decisions, savings analyses, and long-range tax and monetary policy considerations current dollar projections are valuable supplements to those expressed in constant dollars. For these purposes projections making alternative assumptions concerning changes in the price level would be useful.

Equally important, however, particularly for estimates with a detailed breakdown, is that constant dollar projections do not take account of possible shifts in the relative price structure and, therefore, do not describe accurately the growth in real product in the economy. Changes in price relationships and related changes in the product mix induce error in the projection of production totals; they are most harmful in projections which contain a large amount of industry or regional detail. Disregarding price changes is particularly unrealistic in projections for costs and returns of long-range projects. This applies also to underdeveloped areas, in which changes in price levels and price relations are themselves an instrument of economic growth policies. While we at the National Planning Association have not as yet addressed ourselves to this problem, I wanted to mention this as one of the areas in which further work is needed.

IV. *The Impact of the Uses of Projections on the Economy*

Several writers have pointed out that the use of long-range economic projections in investment planning marks an important change in business behavior and is likely to have a deep impact on the economy. Usually two arguments are made. One is that a business executive who orients himself by reference to future markets "raises his sights" and formulates bolder programs than one who only thinks in terms of present markets. The use of projections in itself may make for a faster pace of business investment and economic growth.

The second argument is that long-term investment planning makes for steadier business investments and greater economic stability.

Both arguments are plausible and seem to be borne out by the experience of the last decade. Business certainly has raised its sights in comparison with previous periods. Also, during the two recessions of the past decade, business investments were not changed very much contrasted with business intentions formulated before the recession. Cancellations and postponements of investment plans occurred but were relatively rare. These recessions, it is true, were mild and of short

duration. But then it might be said that the mildness can be explained in part by the fact that business did not curtail investment plans more drastically.

These arguments and experiences do not prove, however, that business investments therefore have ceased to be one of the destabilizing factors in the economy. Formulating investment plans with the aid of long-range projections in itself does not protect against the danger of overinvestment. Business has still to determine the share of the market for its products which it uses as a target and the time when it expands facilities to meet future demand. In an industry of vigorous enterprise, it may well be that everyone expects to expand at the cost of his competitor. The bunching of investment programs at the time when long-range invesment planning was first undertaken by many enterprises may have contributed to the very high rate of investments in these last years. This in turn may have contributed to the inflationary pressure of those years, and thus dampened the rise in real personal incomes. All this may have added to the discrepancy between the rise in capacity and the lesser rise in active demand. This situation requires policies designed to raise active demand.

Finally, one bit of speculation concerning another possible impact of a widespread use of projections in business planning. The projections prepared by various estimators show a remarkable similarity. It follows that the guideposts used by various industries have a high degree of consistency. This would mean that capacities in interrelated industries will grow in similar proportions. This could lead to the suggestion that through the use of projections we may accomplish by entirely unrelated individual actions of corporations in various industries a more balanced expansion in capacity than would be possible if each corporation would expand guided only by temporary market considerations. Perhaps the use of projections in business is just one aspect of the tendency towards what has been called the professionalization of our economic system or, still broader, what Calvin Hoover has called the emergence of an organizational economy.

But then, I admit, it may be megalomania or even blasphemy if the economist engaged in long-term projections thinks that he may unconsciously assist in guiding the "invisible hand."

A THEORY OF ANTICIPATORY PRICES

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President Copeland, in his presidential address, implied that what he called the "model analysis view" is characteristically one which tends to involve exploring the regulatory function of competition in disregard of the problems of institutional supplementation. I offer you this morning, however, a model analysis that is oriented toward problems of institutional supplementation.

My model deals with a class of markets which has been the subject of much criticism and some institutional supplementation. Here and there the supplements have taken rather drastic form. An immediate implication of the model analysis is that some of the institutional supplements have been conceived in error and administered under delusions. The moral that I draw is not that we should keep hands off the markets but that we need really to understand such markets before we can effectively improve them.

I. *Price Fluctuations*

In 1921 F. W. Taussig published a paper under the title, "Is Market Price Determinate?" It has been read and discussed more widely, perhaps, than any other of Taussig's journal articles. What drew so much attention to it was not any statement of facts previously unrecognized, nor the suggestion of a new theory, but the clear statement of a problem that had been troubling economists and that has continued to trouble them. It was a problem that had been troubling others, also. Ten years earlier George Binney Dibblee, a British businessman, wrote a book which posed at its beginning the same problem as Taussig's article.

The class of prices concerning which Taussig wrote included such commodities as eggs, potatoes, wheat, and cotton. Of these he spoke explicitly. With them he included prices of stock exchange securities, as having the same general characteristics of behavior. These are sometimes called speculative prices, but to call them that may be misleading. At the time Taussig wrote, potatoes had no speculative market in the usual sense of that term. All of these prices, however, have the characteristic that they are influenced by expectations; if we call them anticipatory prices, we cannot be understood to exclude some prices that we mean to include.

Taussig's theme, which many of you will recall, may be indicated by a brief quotation:

> Thus . . . a fall in the price of eggs may cause the country dealers and the cold storage people not to hold back their supplies, but to send them in hurriedly, for fear of a further fall; while city dealers, so far from buying more, will hesitate to buy, having the same fear. The bottom will drop out of the market. On the Chicago Board of Trade the bears, when they sell wheat short and pound away at the price, count on the same course of events. The lower price will not tempt others to buy, but frighten them to sell. Your equilibrium will not necessarily work out at all. . . .[1]

This theme Taussig developed at considerable length, with consideration of various causes of price fluctuations. But he held that there are limits to the possible extent of these fluctuations:

> The underlying conditions of supply and demand are known for all the staples well enough to make possible a rough prognostication of the season's course of prices. It may be quite clear that potatoes will be higher than last year. But there will be a penumbra of uncertainty. Within this there will be ups and downs, many and perhaps wide fluctuations. (*Ibid.*, page 400.)

For a crop like potatoes, Taussig suggested, the width of the penumbra within which price fluctuations may occur is somewhat restricted by the need to dispose of the total supply within the season. Concerning products like wheat and cotton, of which supplies may be carried over from one crop year to the next, he said:

> There is a wider range for unexpected developments in the situation, for the calculations and guesses among dealers and speculators, optimism and pessimism, waves of sentiment and belief. There is a zone of uncertainty, a penumbra, of considerable extent. (*Ibid.*, page 401.)

Whether or not they found Taussig's concept of a penumbra to seem realistic and satisfying, most people who have thought about the matter, including many not counted as economists, have shared at least Taussig's view that supply and demand do not determine market prices with precision. I have spoken of Taussig's discussion of the matter only as one particularly prominent and clear statement of a prevalent view concerning price fluctuations: that in large part they cannot be explained by supply and demand.

II. *Supply and Demand*

Alfred Marshall spoke of price fluctuations, of the "higgling and bargaining" of the market, and of "speculative manoeuvres" in futures markets, but in his long discussion of "the general theory of equilibrium of demand and supply"[2] in Book V of his *Principles*, these matters received only passing mention. Writing more than thirty years before Taussig, Marshall simply had not set himself the task of considering market price with any great care. His concern was with what he called "normal" prices; that is, with equilibria for periods of different lengths

[1] F. W. Taussig, "Is Market Price Determinate?" *Q.J.E.*, May, 1921, pp. 396-397.
[2] These words are from the title of the summary chapter of Book V.

longer than those involved in the consideration of market prices. His "illustration from a corn-market in a country town" was not primarily a discussion of the formation of market price but an illustration to develop the concept of equilibrium.

The words supply and demand mean widely different things in different contexts. One may, of course, define them in a sense such that market price is indicated as precisely determined by the bids and offers that are in effect at any instant when a price is formed. I think it indicative of Marshall's purpose that he did not discuss market price thus, but in terms of price-related intentions to buy and to sell during the course of a day. He thus began at one step removed from a direct and automatic connection between the equilibrium price and the actual price at any moment. In his later discussion of the equilibria of "normal" demand and supply for periods of different lengths, the connection would be still less direct.

In later years economists began to give more attention than did Marshall to short-period economic phenomena; to economic fluctuations. When they studied market prices, they sought of course to deal with them by means of the theoretical apparatus which was at hand. Although the theory had not been designed, either by Marshall or by others, to explain fluctuations in actual market prices, it appeared serviceable for that purpose. The fluctuations seemed to have the nature of a sort of "higgling and bargaining," on a grand scale. And statistical studies showed that, if one took an average over a whole season of the widely varying prices of, say, potatoes or cotton, that average usually conformed fairly well with the underlying conditions of supply and demand for the season.

But when statistical study was directed at the price fluctuations themselves, the fluctuations proved to have different characteristics from what the theory seemed to require. In the main, they were not of the sort called for by Taussig's concept of "ups and downs, many and perhaps wide fluctuations" within a penumbra. Statistical evidence regarding the nature of the actual fluctuations was published over twenty years ago for both commodity prices and stock prices.[3] But few people recognized this evidence as having any significant meaning for the theory of prices; and no one, so far as I know, had any clear idea of what the meaning of the evidence might be. I, at least, was long at a loss to interpret the observations. Then, nine years ago at a meeting of this Association, I suggested an interpretation of the peculiar characteristics the price fluctuations have been shown to possess, and now I

[3] W. I. King, *Index Numbers Elucidated* (1930); Holbrook Working, "A Random-difference Series for Use in the Analysis of Time Series," *J. of the Amer. Statis. Asso.*, Mar., 1934, pp. 11-24; Alfred Cowles, 3d, and Herbert E. Jones, "Some a Posteriori Probabilities in Stock Market Action," *Econometrica*, July, 1937, pp. 280-294.

want to offer a model which can give a better understanding of the true nature of price fluctuations than we have had.

The basic idea underlying the model is that it must make adequate place for expectations in the formation of demand. Prices of such commodities as potatoes or wheat, if formed in a "free" market, must be formed under the influence of expectations.

One may think it conceivable that the prices of such commodities could be arrived at without influence from expectations, but this is a delusion. Suppose, for example, a potato market consisting only of producers on the one hand and of consumers on the other; and suppose that at harvest time producers and consumers met in a great auction, at which consumers had to bid for what potatoes they wanted during the season, knowing that they could neither buy more later nor resell a surplus if they bought too much. Such a market would not be free of influence from expectations. Consumers would be forced to anticipate their wants during all the future months of the season; to guess at the prices which they would later have to pay for bread and for meat, as influencing what they were willing to pay for potatoes; and to forecast what income they would have during the season.

In short, this grand auction would not bring consumption demand directly into the market; it would merely force consumers to become in a sense speculators, anticipating their future consumption demands. And I should think it not at all certain that consumers, operating thus, would more accurately anticipate and aggregate their future utility functions than dealers and speculators do with the present organization of the potato market. But that is beside the point at the moment. The point is that prices such as we are discussing must be formed under the influence of expectations, and we therefore need a theory of market price founded on expectations. We are dealing with prices that must be anticipatory.

III. *A Realistic Model of an Anticipatory Market*

When we undertake to build a market model which takes account of expectations, we may simplify matters by taking supply as fixed. Prices are set from moment to moment, and at any given moment the supply is the quantity then in existence. Expectations, therefore, are involved only in the formation of demand. This requires that reservation prices be considered as part of the demand. In a market where "short" sales are possible, or forward sales of any sort that influence the present spot price, the "shorts" form a negative component of the demand. It is not necessary that we proceed thus, instead of treating short sales as in effect adding to the supply with which demand must equate, but it will simplify matters to do so.

The demand schedule which we thus conceive is not a schedule of

amounts that will be bought during any particular interval of time, as is a consumption-demand schedule, but is a schedule of amounts that will be held at a particular time. When the schedule moves up or down, price moves up or down with it, but the movement tells nothing about resulting sales. The price movements may be accompanied by a large volume of buying and selling—that is, by a large transfer of ownership from one group of holders to another—or by only the single small transaction necessary to establish a price. Because this holdings-demand schedule is not all of the same sort as a consumption-demand schedule, the two are no more comparable than a reservoir is comparable with a stream. The schedules are nevertheless related, because the holdings schedule is based on expectations concerning consumption demand, along with opinions concerning the magnitude of existing supplies.

The nature and the behavior of the expectations included in the model will depend on the kinds of people supposed to be in the market. These may be taken to include producers and consumers as well as dealers and "speculators," in proportions such as may be found in actual markets.

The major problem in designing our model is to state appropriate specifications concerning the information and the quality of judgment employed by traders, and the manner in which they act. The specifications must be such as to permit deducing what sort of price fluctuations the model would generate; else the model will be of no use in the study of price fluctuations. Second, the specifications must not depart too much from reality; else the usefulness of the model will be impaired. For example, the model must not assume that future events can be predicted with a precision much greater than in the real world. Third, we should exclude from the model such influences as manipulation and the release to traders of "information" known to be false. And finally, we shall do well to exclude higgling and bargaining from the model. Reasons for the latter exclusion, which may seem questionable, cannot be fully stated at this point, but I think the virtues of simplicity in a model give sufficient reason.

In the traditional model of a "perfect market," all traders were assumed to have equal knowledge and presumably equal ability to apply their knowledge; but that assumption would impair the usefulness of our model because it would eliminate the differences of opinion that are the source of much trading in a real market. To provide for differences of opinion, it is necessary only to specify that the traders are human rather than superhuman in their mental capacity. The amount of pertinent information potentially available to traders in most modern markets is far beyond what any one trader can both acquire and use

to good effect. Circumstance and inclination lead different traders to seek out and use different sorts of available information; and if at any time some sort of available and useful information is being generally neglected, someone is likely soon to discover that that neglect offers him a profitable field to exploit. In short, traders are forced and induced to engage in a sort of informal division of labor in their use of available information. Using different information, different traders must find themselves often of different opinions, one buying at the same time that another sells, even though all may stand at an equal high level of intelligence, steadiness of judgment, and quantity of information at their command.

Even though differences in level of ability among traders in our model need not be assumed in order to have a good deal of trading, some such differences must be assumed in order to approach reality as closely as I think the model should. Perhaps enough disparity would be provided by supposing only that most producers and consumers of the commodity have poor judgment as traders, while all other traders stand on an equal, high plane of competence. I should like, however, to include in the model a small group of other traders with a low level of trading competence. I include them in order to feel sure that the model requires substantial exercise of the realistically necessary function of countering the effects of ill-informed and inept trading. But I keep the amount of such inept trading small enough in the model to avoid overstraining the corrective power of the market; the inept trading is without substantial price effect. To summarize, then, the model that I propose has these characteristics:

1. It assumes prices to be always formed through the medium of human decisions, on the basis of information such as may realistically be supposed available to traders.

2. It assumes existence of conditions, within and around the market, such as have actually prevailed in the world during recent years, except in certain specified respects.

3. The specified departures from reality, chosen with a view to eliminating sources of undesirable price behavior, are as follows: (*a*) The number of traders in the market is large, no one trader can by himself exert an appreciable effect on the price, and no trader enters into agreements to act in concert with others. (*b*) The information available to traders, though sometimes erroneous, incomplete, or false, is never intentionally so. (By this and the previous specification I mean to eliminate all possibility of "manipulation.") (*c*) Nearly all of the traders are persons of rather exceptional trading ability and judgment, emotionally stable, with a large fund of pertinent knowledge, skilled in using their knowledge, and they give all of their working time and

energy to the business of trading and keeping appropriately informed. (By these specifications I mean to eliminate all but a small residual amount of undesirable market behavior arising from the presence in the market of ill-informed and unskillful traders.)

IV. *Conclusions from the Anticipatory Market Model*

Reasoning concerning price behavior on the basis of the model used by Taussig has encouraged the belief that there is no good economic reason for very frequent change in prices; and that there is little, if any, good reason for the sort of speculative trading that involves buying today and selling tomorrow, or next week. The Taussig model has no way of accounting for frequent price change or for in-and-out speculative trading, and consequently these phenomena in actual markets, being left outside what the model can account for, appear wholly as evidence of defective performance of the actual markets. Let us see if our anticipatory market model can account for them.

In our model, traders must seek information to guide their actions in price formation. Some traders concentrate on getting pertinent market information quickly, ahead of others. Instead of waiting for the publication of official crop estimates, for example, they go out through the country themselves and observe the condition of the crops; or they arrange for observers in the country to telephone reports to them. There are many sorts of information, bearing on prospective supplies, on prospective consumption demand, and on prospective changes in business conditions and in the general price level, which they may seek to obtain in advance of routine publication of the information.

Another class of traders seeks the advantage of timeliness in a more adroit manner. Such traders consider, for example, that the progress of the crops depends on the weather. So they watch the weather. And by obvious extension of this idea, they watch the weather forecasts and perhaps study the weather map and make their own forecasts. As there are many sorts of obviously pertinent information that a trader may seek to get early, so also there are many sorts of information that a sophisticated trader can use to get advance indications of coming events.

Anticipating events requires special knowledge and special skills. While some traders seek to predict crop developments, others seek to predict changes in general business prospects. Traders who concentrate intensely on getting certain sorts of information early cannot do so for all sorts of information. And the time and the effort spent on gaining special knowledge and skill in prediction cannot be spent on developing skill in appraising precisely the appropriate effects of the events predicted. So the traders who seek especially to get information early,

either information on events or information to predict events, are traders who tend to seek quick profits. If events falsify their predictions or if the price moves contrary to expectations because of overriding influence from some other sort of event that they did not foresee, they take their losses quickly.

In short, the kinds of information that deserve to influence prices are many and varied. There is an almost continuous flow of such information, through private channels of information as well as through public channels. So it is reasonable that price changes should be frequent. Moreover, the problems of getting information early and the diversity of sources and kinds of information lead logically to much trading in which profits or losses are taken very quickly. In-and-out trading can be merely a consequence of a desirable sort of division of labor among traders.

From our model we can also deduce something about the nature of the price fluctuations that it will generate. The able and well-informed traders whom we have been considering make their profits by getting information that permits them to predict price changes. The information on which these predictions are made, however, so far as it is new and useful for price prediction, is itself unpredictable, or substantially so. Consequently we may say, subject to slight qualification, that the price changes generated by the model are unpredictable price changes. That is, no change is predictable except on the basis of the information that gives rise to the change. But this statement must be slightly qualified because an important piece of new information must ordinarily generate a somewhat gradual price change, not an instantaneous one.

The reasons for gradualness of most substantial price changes may be suggested by considering the measures required to avoid gradualness in the price effects of one particular sort of information; namely, official crop estimates. First, the day and hour when such estimates will be released is advertised in advance, so that everyone interested may be prepared to give prompt attention to the information. Second, great care is taken to avoid having the information leak out to anybody in advance of public issuance. And third, the information is released shortly after the close of trading on one day, to allow a maximum amount of time for traders to receive and digest the information before trading begins on the next day. The explicit purpose of these measures is to give all traders equal opportunity to make use of the information, but the conditions required for that purpose are also conditions required to avoid gradualness of price change, which must occur if a few traders acquire information ahead of the rest or if a few traders perceive price significance in information before others see that it has such significance.

An interesting consequence of the tendency of price changes to develop somewhat gradually, in our model, is that this tendency introduces a small degree of very short-time predictability into the changes —predictability even without knowledge of the information that is producing the price changes. When a small amount of price change has occurred, there will exist a certain probability that that change is the beginning of a larger one.

Knowledge of the existence of this probability may be used differently by two different classes of traders. Traders accustomed to act primarily on the basis of new information recognized as deserving to have a price effect may view an adverse price movement as a warning that the price is responding to other information which they do not have. Such a trader, having bought on the basis of information that, by itself, warrants a price advance, may therefore sell promptly if the price movement goes contrary to his expectations.

But what of the small group of relatively ill-qualified traders whom we have included in our model but have thus far ignored? Some of them, with little opportunity for being first in the acquisition of information, and little ability to interpret the information that they do get, may choose often to utilize the probability that small price movements are the beginnings of larger ones. They may choose to base much of their trading on an effort to "go with the market." Such trading cannot be very remunerative in a market such as our model provides; it cannot be nearly so certain of yielding profits as trading on the basis of information acquired early and appraised accurately. But done skillfully, though it resembles living on crumbs dropped from the table by others, it may be the surest way by which an otherwise ill-equipped trader can gain some net profit. And incidentally, it is a sort of trading that can help a beginning trader to graduate into the ranks of the well-informed and skillful traders of whom our market is mainly composed.

How well, finally, do the price fluctuations generated by the model correspond with actual price fluctuations? This is a particularly interesting question because the price fluctuations of the model are not vagaries of the market—ups and downs within a penumbra of indeterminateness—but results of expert appraisal of the significance of changing economic information. The question is objectively answerable from at least two sorts of statistical evidence.

One kind of evidence involves reasoning in terms of a class of statistical characteristics with which economists are not generally familiar; namely, such characteristics as distinguish a random chain, on the one hand, from a random series or from a more or less irregular cyclical series, on the other hand. Concerning such evidence, I need say here only that it was what first led me to see that actual price

fluctuations are mainly not of the sort that they are commonly imagined to be; and that after I had devised a market model that could account fairly well for the main characteristics observed in actual price fluctuations, that it was further and more searching evidence of this sort which showed that I needed to introduce a certain amount of gradualness of price change into the model. In short, the market model that I have presented was devised expressly to meet the requirement that it generate price fluctuations closely resembling those observed in actual prices. The quite different line of argument for the model that I have given here is simply a demonstration that the need for such a model can be shown by a different line of reasoning than actually led me to it.

A second kind of statistical evidence that the model corresponds fairly well with conditions in actual markets can be obtained through study of correlations between the prices of annual crops and the appropriate statistics of supplies. Consider corn, in the United States, for example. The crop is harvested mainly in October and November. The size of the supply that must serve until harvest of the next crop is fairly accurately estimated by mid-October, is known more precisely by mid-November, and is the subject in December of a "final" official estimate that is almost universally accepted as giving the best information then available on the size of the supply. What relations should we expect to find among correlation coefficients expressing the degree of relationship between the final official estimate of the supply each year and prices, or price averages, for different times in the year?

For the years 1921-22 to 1938-39, when corn prices were little influenced by governmental interposition at any time, the correlation between the December estimate of the corn supply (crop plus carryover) and the seven-month average spot price for November-May, inclusive, was $r = -0.88$ (based on first differences of logarithms of both series). The correlation between the December supply estimate and the average price for any one month, on the supposition that the vagaries of market price are large, must be a good deal lower than this. And the correlation between the December supply estimate and the price on any one day of a month—say December 15—must be considerably lower yet. And if we think of price as being formed largely by a supply and demand that act impersonally, it seems reasonable to suppose that the price soon after harvest would show a comparatively low correlation with the supply; and that the highest correlation for a price taken in any one month would appear at some time near the middle or end of the crop year, after there had been time for discovery and correction of any early-season maladjustment of price to supply.

But the facts, as may be seen from Table 1, are that the November-May average price, the average price for December alone, and the price

on December 15 all show about the same degree of correlation with the December supply estimate: the coefficients of correlation are −0.88, −0.87, and −0.88, respectively. And the highest correlation between supply and price occurs in the month of issuance of the "final" crop estimate, almost immediately after completion of the harvest, not later in the crop year.

All of the main relationships of the coefficients in Table 1 can be

TABLE 1

CORRELATIONS BETWEEN ESTIMATED ANNUAL SUPPLY OF CORN AND VARIOUS CORN PRICES*

Months	Weighted Average No. 3 Spot, All Days	July Future, All Days	July Future, Midmonth
November–May	−.88	−.86	
November	−.86	−.84	−.84
December	−.87	−.85	−.85
January	−.85	−.82	−.80
February	−.84	−.80	−.73
March	−.83	−.81	−.82
April	−.83	−.83	−.86
May	−.80	−.85	−.70
Average	−.84	−.83	−.80
			(December Future)
December			−.88
November			−.86
October			−.80
September	−.58		−.78
August			−.72
July			−.24

* Based on correlations of annual first differences of logarithms of December official estimate of supply (carry-over plus crop) and of price, for crop years 1921–22 to 1938–39.

explained, however, with the aid of our anticipatory-market model. In a market in which the prices were formed wholly by expert judgments based on existing information, it would be the price in December that was most highly correlated with the supply information available in December. The correlations for later months would diminish progressively, perhaps partly because later prices would sometimes be influenced by later evidence of some error in the December estimate of supply but more particularly because variations in consumption demand from year to year, which are largely responsible for the correlations between supply and price falling below unity, exert their influence on the December price mainly on the basis of uncertain expectations, but affect later prices more strongly, on the basis of a good deal of direct evidence concerning what the domestic and export demand has proved to be.

From the model we may see why the price of the July future in months prior to July should be less highly correlated with the December supply estimate than is the spot price. The spot price is the expected price in July minus a "carrying charge," and the carrying charge is highly correlated with the supply of corn; thus supply exerts its influence on the spot price in two ways and on the price of the July future in only one of those ways. And the same reasoning, adjusted to one difference in the facts of the situation, explains why the spot price in September, prior to the harvest, shows a lower correlation with the December supply estimate than does the price of the December future: the spot price, as before, is the price of the future minus a carrying charge, but this carrying charge, which is often strongly negative, depends on the size of remaining old-crop supplies, and that has little relation to the size of the supply that will be available after the harvest —indeed the correlation between supplies in successive years for the years of this record is negative ($r = -0.43$), perhaps by chance, or perhaps because there is some real tendency for a large crop to be followed by a small one and a small crop by a large one.

I would not want to leave the impression of suggesting that my anticipatory market model explains everything that can be observed in actual markets. According to the model, as a first approximation, at least, the correlation of the December supply estimate with the November-May average price should be no higher than the average of the correlations with prices in the seven months separately; but in fact it is -0.88 as against -0.84. And according to the model, the correlation of the supply estimate with an average of daily prices for one month of each year should not be sensibly higher than its correlation with the price on any one day near midmonth each year; but in fact, though that happens to be the case for some months, such as December, the averages of correlations for all of the seven months are -0.83 for the "all-days" prices and -0.80 for the single-day prices. In short, there are imperfections in the functioning of real markets that have been excluded from the model. But the model, by explaining the good reasons for a great part of what occurs in actual markets, shows that the imperfections of such markets are not nearly so large as reliance on an inappropriate market model has led people to infer.

DISCUSSION

ROBERT M. WEIDENHAMMER: Dr. Colm is right when he blames the bunching of capacity expansion decisions during the years 1955-57 for having contributed to both the late inflation and the current recession. The boom had come to its end when per capita disposable income in constant dollars began to decline in 1957.

Dr. Colm is also right in attributing part of the blame for the overstimulation of investment activity to the new art of long-term demand projections. Even the most skeptical executives evidently were impressed by the echo effect of matching a sharply rising birth rate with a demand for cars and other durables twenty to twenty-three years hence. Because this tidal wave of babies had started well over a decade ago, a boom was indicated for the mid-sixties and the competitive spirit made management jump the gun.

Other projections were simply extrapolations of demand in the postwar decade; they may have neglected changes in backlogs of demand, of consumer liquid assets, consumer debts, money supply, and interest rates. For individual industries, new technologies and new products may widen markets or else new competition may narrow them.

If extrapolations of demand are based not only on the postwar period but also on earlier decades, then they may differ by as much as a 50 per cent spread, depending on whether they are based on past peaks, valleys, or averages. There are good enough reasons why sales, and, therefore, also production managers, should be interested in the peak trend line, because it is their job to be prepared to furnish goods and services in periods of peak demand rather than let these opportunities go by default to the competition.

Quite different will be the point of view of the treasurer or of the firm's banker who must make sure that a possible period of low demand and of losses will not endanger the firm's solvency. Obviously, an expansion financed with borrowed funds, especially short-term, calls for careful study of the valley trend as well as the peak trend.

Two further aspects of long-term projections should be mentioned. The first is the possible hazard arising from projections made by executive agencies or Congressional committees. Such "official" projections, even if at the time resented by the industry, may, with or without government inducements, cause capacity expansions which otherwise might not have been made. The second is in the field of price policy, where unduly optimistic projections of demand may cause price increases which in turn tend to stimulate expansion. In a recession like the present, a belief in favorable long-term projections will tend to prevent cancellation of expansion projects and price cutting; it may even encourage wage increases followed by price increases. There is not time to discuss the effect of such policies on the length and depth of a recession or on the profits and solvency of the firm.

The following references to two industries are illustrative only and do not try to prove any of the points raised above:

Aluminum. For half a century the demand for aluminum has increased on an average of about 11 per cent a year. During the Korean crisis the industry expanded greatly after being given a double inducement; namely, five-year amortization and a five-year stockpiling contract for any ingot not sold commercially. In 1956, the industry was evidently so impressed by its long-term growth curve that, this time without any government inducement, it embarked on a 50 per cent capacity expansion, 35 per cent of which should be in operation at the end of 1958. The needed funds were raised mostly through bonds rather than equity, in spite of the fact that for three of the four North American producers debt exceeded 50 per cent of invested capital even before this last expansion. Fixed power contracts of the older plants make output reductions costly. To stimulate demand, preference has so far been given to finding new uses for the metal rather than to price cutting.

Cement. In December, 1956, the Select Committee on Small Business submitted a report entitled, *The Portland Cement Industry; Supply-Demand Outlook.* On page 26 in Table 7, the demand is projected for 1957-65. A deficit of 3.5 million barrels is indicated for 1958; the deficit increases to 24 million barrels in 1960 and to 65 million barrels in 1965.

Several new cement plants are now being constructed, but just last week, for the first time in twenty years, three plants were closed because of oversupply of cement. The oversupply had developed despite a five-week strike last summer, which incidently caused a sharp increase of imports of European cement. Because of higher wage costs, a 5 per cent increase in prices has been announced by several cement producers to take effect January 1, 1958.

DONALD F. GORDON: I think Dr. Working has given us a provocative model and some intriguing statistical results. His theory asserts that in speculative markets, market behavior and price phenomena are much more rationally determined, i.e., warranted by information or judgments about information, as compared to bluff and guessing other guesses, than many would believe on comparing actual markets to perfect markets with perfect knowledge. My remarks are going to be addressed to two aspects of this paper. First, I have some difficulty in comprehending the rationale for one of the model's assumptions, and fortunately for my appreciation of the statistical results, it seems to me that this particular assumption may be unnecessary in arriving at Working's results. The second question I would like to consider briefly is the applicability of Working's model to current policy questions.

Let us consider, first, the assumptions of the model. A particular assumption I find implausible concerns the division of labor in the acquisition of different types of information. This, Working asserts, is forced upon traders by the impossibility of complete knowledge and makes it possible to account for differences of opinion among competent traders. An additional difficult concept is the further division of labor between specialists in acquiring early information and specialists in appraising information, and this accounts, according to Working, for the frequent in-and-out activities of the former.

While the notion of the division of labor is appealing at first glance, it should be noted that the division of labor among the traders in Working's model is not the same phenomenon that it ordinarily is in economic analysis. Ordinarily, the concept refers either to different firms producing different products or different parts or stages of the same product; or it refers to the internal divisions of a single firm. In the first instance it is induced by the outside configuration of prices; in the latter, by the internal desire for minimum costs. I do not see what external price pressures would induce traders to specialize in Working's way. Division of labor internally might be achieved by formation of a trading firm with some specialists in one type of information, some in other types, and still others in appraising information. This is, in fact, done by firms going in and out of stock markets; but in many markets traders seem too individualistic. In any case, this is not division of labor among traders or trading firms.

If a trader is to operate individually, while he may specialize in one type of information it may also be disastrous for him to ignore others. By analogy with the rational entrepreneur, he may plausibly allocate his resources—in this case his time and energy—so that the last unit yields the same product, in some rough sense, in every direction. Traders would only devote all or most of their effort to one type of information, for example, if they were very unproductive in another; and since they are all in effect producing the same "product" and are all by assumption more or less competent, I find this a little difficult to believe.

But the principal reason I find for rejecting this particular aspect of Working's model is that it is unnecessary, I think, to produce his interesting and valuable conclusions. Even if each competent trader were to spend equal portions of time and energy on each phase of acquiring and using information, we could still account, by amending the model slightly, for much in-and-out trading and many price fluctuations. First, the traders may weight the relative importance of different probabilities of gains to be had and risks to be run quite differently. Second, while equally competent, they may appraise information differently, since all are subject to great uncertainty. We may think of each trader as possessing a type of intuitive regression equation distilled from his past experience. The "coefficients" representing the force of different factors may differ among them, and since the underlying population from which the experience is drawn is continually changing, it cannot be shown that one set of weights is superior to another.

If, in fact, we observe different traders looking at different indicators, this does not refute the amended model, nor does it necessarily support Working's version. For being subject to uncertainty they assign different coefficients to different kinds of information even if they are equally competent. On the other hand, if they are to specialize according to Working's model, then traders would specialize on one type of information, believing full well that another type of information which they ignore is equally important. I cannot think of what market force would produce this, nor what advantage would accrue from such behavior.

Combined with the continuous flow of information, these amendments would

produce frequent fluctuations in prices, much in-and-out trading, and unpredictable changes in price. Any piece of information appraised differently would induce a different warranted price rise for different traders. The actual price rise would be intermediate, and consequently many would enter and leave the market. Or a given piece of information, appraised identically, may change the probabilistic patterns of gains and losses so that some sell and others buy. The more frequently new information is obtained, the more frequently prices change. The more frequently the information pertains to variables about which opinions differ or to variables that change gain and loss probabilities, the more in-and-out trading occurs.

This slightly amended model I offer as either an alternative or a complement to the first; they appear to predict many of the same forms of market and price behavior.

I should like to add a final comment on policy applications. So far as I know there is no serious policy issue at present in the United States regarding speculative trading in commodity markets. The applicability of the model seems to be reduced by the closing in upon commodity markets of administered prices on the one hand and government interference on the other; and where the latter has substantially destroyed these markets either here or in foreign countries, I do not think the disapprobation of unwarranted trading has been an important factor. Margin requirements in stock markets may, however, be affected by this disapprobation suggested by the theory Working seeks to replace. Nevertheless, I feel the major area where the belief in the social disutility of speculative trading has influenced policy is in the establishment of fixed exchange rates by most of the major trading countries of the world.

In this area the belief prevails that flexible rates are a boon for the "wicked speculator" and a curse for "legitimate" traders. There is dissenting opinion, of course, and in a few countries a different policy is followed. But if Working's model is generally valid—and his evidence is certainly suggestive—then his statistical results imply more faith in flexibility would be warranted than has hitherto prevailed. Certainly it would be interesting to apply, if possible, Working's statistical techniques to the foreign exchange market.

One final word of caution. Working's evidence that unwarranted price changes followed by corrective action are not statistically significant (presumably at the 95 per cent confidence level) is scientifically important. Yet we know that boom and bust behavior does occur. There was a tulip bubble and there was the 1929 stock market debacle. If the social consequences of such behavior are serious in the foreign exchange market, then a higher confidence level, perhaps, could be reasonably required for policy purposes.

Alfred Sherrard: It is true for economists, just as it is for the traders in Professor Working's model, that "circumstances and inclination lead different [ones] to seek out and use different sorts of information. . . ." The problem, both in the profession and in the market, is to find methods of communication, so that division of labor in the pursuit of knowledge leads to an outcome that is "wiser" or "more appropriate" than any single specialist could achieve by himself. From this point of view, Professor Working's paper is a

signal accomplishment. Here for once we have genuine communication between theory and empirical research—factual investigation casting doubts on a theory and new theory clarifying the facts. Hearing, as we do these days, so much about the formulation and testing of hypotheses, it is a pleasure to see the process actually at work. Furthermore, Professor Working brings to bear two kinds of "fact" that are often as remote from one another as either is from pure theory: on the one hand, abstract statistical analysis and, on the other, the intimate and informal familiarity with market operations that businessmen take for granted, each in his own area.

The whole competitive process has been conceived of—notably by Professor Hayek—as an organization for the dissemination of knowledge: buyers learning through the market what commodities are available and on what terms; sellers learning about the wants of buyers and opportunities for profitable sales. Now, in my opinion, the transmission of information is not the only function of a system of markets. Market organization influences what the facts are as well as who knows them; it affects the nature of the alternatives available as well as our knowledge of those that already exist. Nevertheless, for the markets with which Professor Working's paper is directly concerned, this conception serves very well to define an ideal—a statement of how they ought to perform. Some circumstances, however, are more conducive to such functioning than others. What are these favorable circumstances? Although Working has not addressed himself directly to that question, I believe that his model casts a good deal of light on it.

In Working's model, most of the traders are "persons of rather exceptional trading ability and judgment." There is a small group of "inept" traders, but they have only negligible influence. Under these circumstances, each movement of the price will be interpreted by the "representative" trader as a signal that some qualified person believes such a change to be "appropriate." The trader will respond to this in the light of his own independent information. If he feels that the new price is not "appropriate," he has an opportunity to profit by either buying or selling—backing his own judgment against the composite judgment of other traders, as represented in the prevailing price. His action will then contribute to a further price movement. The essence of the matter is that the information and understanding of the different traders, insofar as they are not in agreement, can be made effective, in a social sense, only through buying and selling. Hence frequent price changes and a large volume of short-run transactions cannot—contrary to Taussig's suggestion—be taken as evidence that the market is functioning ineffectively.

Now consider the behavior of Professor Working's inept traders. They have, in effect, no indepedent information or judgment. Hence they can only attempt to "go with the market"; that is, to take each change in price as foreshadowing a further change in the same direction. But this is exactly what most traders do in Taussig's short-run model. It seems to me inaccurate to say, as Professor Working does, that Taussig did not take account of expectations. Rather, he assumed tacitly that expectations are determined mainly by recent changes in the price itself. (In this respect his conception is comparable to that of Hicks in *Value and Capital* and his exposition could have been greatly

clarified if some of Hicks's terminology had been available to him.) Of course, Taussig was not assuming that most traders are literally inept; but he was assuming, I believe, that in the short run they are influenced less by their own independent knowledge of supply and demand than by the current course of market prices. Thus they behave as if they were inept, according to Working's definition.

Working has shown to my satisfaction (although he has not been able to present his statistical material here) that such inappropriate behavior is not in general true of the corn market in the United States. What can we say about other markets in this respect? We must await further studies, no doubt, but two considerations stand out already.

First, if the relative importance of uninformed or incompetent trading increases sufficiently, then even the most skillful trader will be tempted to act in an inappropriate fashion. "Going with the market" is not a waste of time for the shrewd trader unless he is reasonably sure that inappropriate movements will be quickly corrected. When there is no such assurance, then Keynes's famous description applies to the most competent as well as to the least: "anticipating what average opinion expects the average opinion to be."

Second, in some markets it may be almost impossible to determine what an appropriate price would be. On the stock exchange, for example, knowledge of demand and supply, according to any reasonable meaning of those terms, is not likely to take us far. One way to state the difficulty is that the article being traded is not a standardized commodity, such as corn. Securities vary in quality, not only from company to company, but from day to day, and the course of their prices represents changing judgment of qualities quite as much as changes in supply and demand. Thus the most skillful trader may be thoroughly in the dark and forced, if he is to remain in the market at all, into predictions that have hardly any relation to economic equilibrium or appropriateness.

Whether any particular market or the whole interrelated system of markets is judged to perform satisfactorily the function of transmitting pertinent information is thus partly a question of fact and partly a question of standards. In the case of corn, the pertinent information is relatively straight-forward, relatively objective; in the case of securities, less so; while for automobiles, hats, cigarettes, books, or moving pictures—assuming that the idea of "market price" has any meaning at all—the problem of what information is pertinent is quite as vexed as the problem of what information is actually conveyed.

What we want from Professor Working, is more. I trust that the statistical material underlying his study of the corn market (some of which I have seen in a preliminary draft of his paper) will be made available soon. After that, could we have some comparative studies—not, perhaps, reaching all the way to, say, the markets for aspirin or economists, but covering the major cases where professional anticipatory trading predominates? A good deal of work along these lines has presumably been done already and has entered indirectly into the construction of Working's model. And then—but perhaps I am now being greedy—it would be interesting, if variations in the appropriateness of price behavior were revealed by such comparative studies, to determine

whether they could be accounted for by objective differences in the organization of the different markets.

JOHN W. KENDRICK: Dr. Colm's paper is just as stimulating as would be expected from one who has practiced the arts of projection so deftly for fifteen years or so and who has contributed significantly to the development of projection techniques. Perhaps I can be most constructive in the short time available by concentrating on a few matters of technique.

I wonder if the relatively high degree of success thus far with long-range projection has not been largely due to the naïve methods used and the aggregate nature of most of the projections. If we look at the breakdowns of past projections, we find that the component projections are not nearly so accurate as is the aggregate real product projection, even though the components are usually quite gross. This is because of the much greater complexity of projection when structure as well as the aggregate is involved and that complexity increases greatly as the detail is increased. Since the composition of product affects its rate of growth, the projected aggregate is in one sense a function of the allocation of resources all along the pathway to the target year—but so far we have been lucky in that the net effect of changing composition on productivity and real product has been much the same as in the past, as a result of offsetting divergences.

Dr. Colm's paper seems to underestimate the problems involved when the economist tries to project structure explicitly. Consider first the broad three-way breakdown of national product among consumption outlays, investment, and government purchases. Projection of government purchases is obviously a judgmental matter; and to estimate even crudely the effect of fiscal operations in the private economy, one must also project tax rates and transfer payments. Then, to be able to allocate the rest of national product between consumption and investment, even assuming full employment levels of income, one must project "normal" saving functions for households, business, and the rest-of-world sectors—and allow for possible shifts in the saving functions—which is again a matter of judgment.

The indicated saving is still not the final step, since actual saving will depend on the extent to which investment demand tends to depart from the indicated equilibrium rates of saving. This involves projection of investment demand, which, dependent as it is to an important extent on technological and psychological factors, also involves a high degree of judgment. If investment demand is expected to be buoyant for the coming decade, for example, this would tend to raise saving above the equilibrium rates if it is assumed that money creation or net dishoarding will supplement voluntary saving at specified rates of interest and levels of income. In this situation, presumably the rate of increase in real capital stock and in output per man-hour would be greater than if a less buoyant investment demand were assumed—which affects the aggregate projection from the supply side.

In view of the possible shifts in the saving schedules and investment demand schedule, not to mention the wide range of alternative government

spending programs, I am somewhat puzzled by Dr. Colm's so-called "bedrock" estimate of 125 billion dollars minimum additional spending out of the 160 billion increase in real GNP that he projects between 1957 and 1965. If in addition to his assumption as to the marginal propensity to consume he assumed a shift in the consumption function and if his capital coefficients and investment demand schedules were different, his 35 billion dollar gap might disappear or it might be larger. Rather than construct high consumption, high investment, or high government models based on the hypothetical distribution of the 35 billion dollars, I think it would give a less restrictive and a more clear-cut range of alternative models to build them on the basis of alternative initial assumptions regarding saving, investment, and government purchases.

Next, I should like to comment on the NPA plans to break down the projected GNP by broad product classes for the several models and translate these into alternative patterns of national product originating by industry groups in order to allow for the effect of interindustry shifts of man-hours on aggregate real product per man-hour. The purpose is to obtain somewhat different GNP totals in each of the alternative models "depending on the composition of demand and production." This modification of a broadside, aggregate approach is well taken but raises a number of complications.

First, we know that the differences in national product per man-hour among industries are due to differences in average hourly compensation and differences in the quantity of capital per man-hour and its unit compensation. This being so, the models with differing industry composition of output would involve differing capital requirements, which would mean that each model should have differing volumes of capital formation on this score alone to be internally consistent. Insofar as differing average hourly labor compensation reflects different occupational composition in the various industries, expenditures for education and training should also differ in the several models.

Second, one wonders if Dr. Colm plans to try to project productivity separately for the various industry groups. We know that industry rates of productivity advance differ significantly, and the several models would tend to have different over-all rates of productivity advance for this reason as well as because of interindustry shifts in man-hours.

Third, projection of productivity by industry, while more difficult than an over-all projection due to the greater variability in industry than in economy rates of productivity change, would be necessary in order to project changes in relative prices of the products of the various industries. The NPA group has not yet tackled the relative price problem, but I believe they will be forced to do so—for otherwise how can they obtain a realistic product breakdown of the GNP in the first place? The composition of private demand depends importantly on relative price changes as well as on changes in tastes; so the industry productivity and price projections would be essential to a firmly based projection of the product composition of national product.

Finally, it is clear that the product and industry breakdown of GNP will have to be on the basis of rather broad groupings if it is to be at all manageable with limited resources. So the total will still be affected by the myriad intra-

industry shifts of resources of which explicit account will not be taken. Possibly some compositional refinement is better than none, but it should be realized that the resulting estimates are still relatively crude.

In conclusion, I should like to underline the importance of making explicit the assumed pathway of the economy between the present and the target year, both with respect to variables comprehended by the GNP and others that stand outside the national accounts. Within the GNP, the cumulative volume of net private and public investment will affect the level of real product per man-hour in the target year, and so will the levels of expenditures on education, health, and other investment-like categories included in consumption or government expenditures. Not included in the accounts, private outlays for research and development and for in-plant or outside training and education of employees will also affect the level of productivity attained in the target year. Also, the movement of prices between now and then—both relative prices and the general price level—will have an important bearing on the aggregates and the composition of real product in the target year itself. I heartily endorse Dr. Colm's plan to attempt to project the relevant magnitudes for the years between the present and the year to which the long-range projection applies. If all this is done, I think we would agree that long-range projections, while possibly more accurate for aggregates than short-range forecasts, are certainly far more complex and demanding of the best skills of the economist.

STATISTICAL COST FUNCTIONS

SOME METHODOLOGICAL ASPECTS OF STATISTICAL COSTING AS ILLUSTRATED BY THE DETERMINATION OF RAIL PASSENGER COSTS

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I

A statistical approach to costing first became prominent in the middle and late thirties with the appearance of the many works of Joel Dean and the steel cost study by Theodore Yntema.[1] In the main, these pioneer works were based on time-series data and concentrated on estimating short-run relationships between costs and output. Early cost studies, particularly the time-series analyses, were subjected to a most searching and thorough criticism in the early forties.[2] Much of this criticism was justified and led directly to improvement of statistical costing techniques. On the other hand, a large body of the criticism, perhaps a majority, was not well founded—a point aptly made by Mr. Johnston in his paper presented at this same session.

In the late forties and early fifties, the arguments against statistical costing took a new turn when the proposition was put forward by Leontief, Chenery, Clark, and others that cost and production functions could be better estimated by adopting a "direct" approach.[3] This involved the construction of cost functions from underlying engineering and price data. The premise was that functions so estimated would be less subject to error and more likely to be logically complete, based as they would be on intimate inspection and acquaintance with the under-

[1] Joel Dean, *Statistical Determination of Cost with Special Reference to Marginal Costs*, Studies in Business Administration, Vol. VII, No. 1 (Chicago, 1936); Dean, *Statistical Cost Functions of a Hosiery Mill*, Studies in Business Administration, Vol. XI, No. 4 (Chicago, 1941); Dean, *The Relation of Cost to Output for a Leather Belt Shop* (National Bureau of Economic Research, 1941); Dean, "Department Store Cost and Production Functions," in *Studies in Mathematical Economics and Econometrics*, ed. Oscar Lange *et al.* (Chicago, 1942); Theodore O. Yntema, *An Analysis of Steel Prices, Volume and Cost Controlling Limitations on Price Reductions: Pamphlet No. 6* in *United States Steel Corporation T.N.E.C. Papers* (New York, 1940), Vol. I, pp. 223-302.

[2] Conference on Price Research, *Cost Behavior and Price Policy*, ed. Edward S. Mason (New York, 1943); Caleb A. Smith, "The Cost-Output Relation for the U. S. Steel Corporation," *Rev. of Econ. Statis.*, Nov., 1942, pp. 166-176; Richard Ruggles, "The Concept of Linear Total Cost-Output Regressions," *A.E.R.*, 1941, pp. 332-335; Hans Staehle, "The Measurement of Statistical Cost Functions: An Appraisal of Some Recent Contributions," *A.E.R.*, 1942, pp. 321-333.

[3] H. Chenery, "Engineering Production Functions," *Q.J.E.*, 1949, pp. 507-531; W. Leontief, "Some Basic Problems of Structural Analysis," *Rev. of Econ. and Statis.*, 1952, pp. 1-9.

lying production relationships. Those using engineering estimates usually were concerned with the problem of determining the full or long-run relationships between outputs and costs. Consequently, this new line of criticism was relevant to statistical efforts at estimating long-run cost functions from cross-section data. There has been a notable lack of critical evaluation of engineering and cross-section costing, particularly of the relative merits of cross-section as opposed to direct engineering estimation. It is to the development of such an evaluation that this paper is devoted. A general discussion of method is contained in the next section. An illustrative application of these methodological views to the rail passenger cost determination problem is presented in Sections III and IV. Section V contains a summary.

II

From a methodological standpoint the engineering approach to costing is essentially a refinement, albeit an important refinement, of the methods earlier used by cost accountants.[4] Underlying both approaches is the presumption that the production operation to be costed is well controlled, or can be well controlled, so that cause and effect between production and cost changes can be easily identified from direct observation. An assumption thus is made that the operation under surveillance approximates a well-controlled experimental situation so that cost changes can be readily traced back to the causal output or factor input changes in production structure.

Obviously, this is a very strong assumption. There are substantial difficulties involved in trying to identify production cause with cost effect in many modern industrial operations. This is especially true of operations employed in the production of more than one product and therefore characterized by substantial amounts of so-called "common" or "nontraceable" costs.[5]

Consequently, if direct observations are to be used in complex joint operation situations, rather expensive and complicated controlled experiments will usually be necessary. It is in this very situation that a statistical approach to costing might be usefully employed. In essence, a statistical approach in the physical and social sciences is generally justified only when well-controlled experimentation is impossible, difficult, or very expensive. That is, the statistical method is essentially a

[4] The main improvements in the engineering approach have been less tendency to overlook nonlinearities and fixed elements in the cost relationships. The engineers are also less prone to ignore offsetting influences on costs in complex, multiple-product situations.

[5] The terminology followed here is the same as that set forth in Joel Dean, *Managerial Economics* (Prentice-Hall, 1956), pp. 263-265. Dean also distinguishes between common costs that are joint product and alternate product costs but this distinction would not seem to be always applicable; i.e., it is not difficult to imagine circumstances in which the two categories would not be mutually exclusive.

technique for sorting out and evaluating the relative importance of different influencing factors in less than perfectly controlled situations. Statistical costing thus suggests itself as a potentially efficient method of establishing cost functions for complex operations when controlled experimentation is overly costly or infeasible.

Several applications might be cited in which statistical techniques could potentially be useful. For example, problems of this type are likely to be met in efforts to cost different types of educational activities (as in Professor Harris' studies of the "Economics of Higher Education"). The same problem is not uncommon in government studies of proposed hydro projects, although one might question the real desirability in many of these applications of attempting to identify separate cost influences. Similar difficulties have long plagued the establishment of "equitable" user-cost taxes on public highways (where, of course, the basic problem is distinguishing between the cost impact of heavy and light vehicle traffic). Also, the evaluation of separate cost influences has long been a central issue in rail regulatory proceedings.

It is worth emphasizing that statistical and engineering approaches to costing are not necessarily mutually exclusive or incompatible. Because of the direct and tangible nature of the results, the direct approach commends itself whenever the control assumptions are reasonably well met. When these assumptions are not met, on the other hand, a statistical approach would seem preferable. It seems likely that situations of both these types may be found in many industries—as, in fact, is the case in the illustrative railroad example presented in the next section. Furthermore, there is no intention here to recommend against the wider use of controlled experimentation in cost determination; the excellent work done in segregating heavy and light vehicle highway costs in several recent tests seems highly commendable. It is a practice, in fact, that, barring financial limitations, might usefully spread to many other sectors. Even when the money and resources are available to undertake good controlled experiments, however, the costs and power of the tests may often be greatly improved by the use of a good statistical design.

In the same vein, statistical techniques are not a universal solution to the problem of estimating costs in joint product operations. The statistical method has its own pitfalls and dangers. For example, very close covariation that may make direct observation of cause and effect difficult may also make the reliable estimation of statistical cost coefficients impossible. Furthermore, there is always the danger that statistical cost coefficients may reflect spurious relationships; that is, included independent variables in the cost equation may not only reflect their own influences upon costs but also incorporate the influence of

unincluded variables that are correlated with included variables. (The recognition of such circumstances requires, of course, close and proper use of outside, already known information about the production process.)

It must also be remembered that the proper application of the statistical method depends on the prior existence of certain conditions. Above all, a reasonably large sample of observations must be in existence that adequately reflects the type of experience relevant to the decision or decisions to be made and also does not reflect too many unwanted or irrelevant influences. Such a sample is less likely to be readily available when the objective is to determine a long-run rather than a short-run cost function. Some sort of approximation to a short-run function almost always can be obtained as long as there are time-series data, even for short periods, on the operation of just a single firm; such data, of course, will usually be obtainable. By contrast, the estimation of long-run functions normally will require data reflecting experience at widely dispersed levels of operation. Time-series data encompassing such a range of experience are also likely to cover such a long time period that difficult to measure technological, labor to capital cost, and other changes will obscure the basic relationship. Cross-sections with sufficient observations, on the other hand, will be available only in industries with many plants or firms. Given the prevalence of oligopoly and economies of scale, such a circumstance will not always be met. The danger also exists that cross-section cost relationships will be heavily influenced by obfuscating geographic differences, although the experience of the present author with transportation costing indicates that this difficulty can be readily overestimated.

Finally, it always must be borne in mind that statistical costs are inevitably based on historical information. This is usually true of cost estimates, of course, but it is always the case with statistical estimates. Being historical, statistical costs must be used cautiously as guides to decisions about the future, since the important fact about the future often could be that the circumstances producing the historical cost experience are or should be altered.

III

The costing of rail passenger services is an excellent example for illustrating the principles outlined in the preceding section.[6] Rail pas-

[6] The discussion of this section is based on a study of *Avoidable Costs of Passenger Train Service* (1957) by the present author, Merton J. Peck, John Stenason, Gerald Kraft, and Robert Brown. This research was conducted under the auspices of the Aeronautical Research Foundation, a nonprofit organization studying problems in air transportation economics. The present study relates to the general work of the Foundation inasmuch as commercial air transportation is primarily a passenger business and the competitive interrelationships between air and rail passenger transportation are obviously direct and

senger operations involve the use of facilities that are solely employable in passenger operations and of facilities that are utilizable both in passenger and freight movements. Consequently, for some operations, the relationship between output change and cause effect is quite direct and evident, while for others the relationship is quite obscure.

Furthermore, the size of the rail passenger deficit is a subject of vital and timely interest. While few doubt any more that the rail passenger business is losing money when considered *in toto* for all Class I railroads in the United States, there is very real disagreement, both within and outside the industry, as to the exact extent of the over-all deficit and, more particularly, the extent or even the existence of the deficit for individual roads. These views could be conditioned, of course, by self-serving rationalizations; thus, it is not entirely surprising that those roads with a good deal of freight and little passenger business (for example, most of the western and southern roads) tend to minimize the size of the passenger deficit while those with high percentages of passenger business (eastern roads like the New York Central, Pennsylvania, and New Haven) tend to view the passenger deficit as very large. Since the deficit must be made up, in the main, by higher charges on freight shipments, the existence of positive net profits for most roads implies that the larger the passenger deficit, the more that freight charges now exceed the costs of providing freight services. It would not require too much sophistication of a regulatory body to see, therefore, that any action to reduce the passenger deficit properly might be accompanied by a reduction in many freight rates. Such a revision in the regulatory structure would almost surely benefit the roads with a heavy involvement in the passenger business and would do little for, and indeed might harm, those roads with low passenger volumes. (Note that when the passenger problem is related in this way to higher or lower freight tariffs, it is very reasonable to look upon the rail rate structure as a taxing mechanism that transfers income from one consumer group to another in the economy; i.e., from those who consume only rail freight services to those who consume both freight and passenger services. If, in addition, the assumptions are made that rail passenger services are consumed relatively more by high- than low-income groups while rail freight services are proportionally larger elements in low- than high-income budgets, it follows that the present rail rate structure is essentially a regressive form of taxation.)

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substantial. The work was financed, in part, by a grant from the American Association of Railroads. A prime objective of the Association in asking the Foundation to undertake the study was to divorce the work entirely from the many conflicting views and interests to be found on the subject of passenger costs within the rail industry itself. Copies of the full report may be obtained from the Aeronautical Research Foundation, 16 Eliot Street, Cambridge, Massachusetts.

Not unsurprisingly, the uncertainty about passenger costs lies mainly in the cost accounts pertaining to rail operations that are jointly used in both freight and passenger service. These accounts typically will include proportionately small amounts of what the Interstate Commerce Commission calls "solely related" costs. Solely related costs essentially vary directly and obviously with changes in a specified output and thus are those expenses whose underlying causes can be easily and directly traced.

Costs that are not easily identifiable in this sense are denoted by the ICC as "common costs." Common costs are costs jointly incurred in multiple-product operations and overhead costs. To determine ICC "full costs," common costs are arbitrarily assigned to freight and passenger operations—if possible according to some best guess of the real causal relationship between the costs and outputs concerned. Usually, the assignments are made according to a neutral weighting scheme; i.e., a unit of freight output (like a gross ton-mile) will be considered equivalent to a unit (gross ton-mile) of passenger output. This procedure is followed despite very widespread disagreement about its legitimacy.

Accounts, therefore, that contain proportionately large amounts of common costs and small amounts of solely related costs also hold the most questionable entries. In this category are virtually all maintenance of way and structure accounts, maintenance and operating cost accounts pertaining to those pieces of equipment that are used in both freight and passenger service, dispatching costs, and such overhead accounts as supervision, legal and other staff services. To a lesser extent, the same holds true of station operating cost and traffic expenses (i.e., advertising, solicitation expenses, rate adjustment costs, etc.). On the other hand, there are a number of accounts in which the solely related costs account for all or virtually all of the outlays. Examples of such accounts would be: repairs to passenger train cars; line haul labor, material and fuel; train supplies; operating sleeping cars; and dining and buffet services. There is also a rather ambivalent set of accounts for which the results vary widely from road to road; the principal accounts in this category are those pertaining to yard and engine house operations.

IV

The costing methodology advocated in Section II suggests that the ICC allocation should be accepted for those accounts in which the bulk of the costs are solely related and, conversely, that a statistical analysis should be used with those accounts that involve substantial joint operations and record large amounts of common costs. Such a dual approach, in fact, was employed in the rail passenger cost study

reported here. This adoption of an eclectic approach is based, of course, on the distinction between those accounts for which output-cause and cost-effect can be readily identified and those for which it cannot be. (In keeping with this principle, certain accounts, like the maintenance of freight train cars and operation of grain elevators, which obviously had little or nothing to do with passenger operations, were immediately eliminated from the analysis; similarly, steam operations were ignored on the grounds that such operations are mainly of historical relevance only.) The basic practical difference between the ICC's present methods and those advocated in this paper is that arbitrary weights are to be avoided when allocating common costs, unless empirically justified. In short, the weights are themselves something to be determined by empirical analysis.

Slightly more than sixty ICC operating expense accounts pertinent to passenger operations remained to be analyzed by statistical means after all the above eliminations had been made. To simplify the analysis, these sixty some accounts were rearranged into thirty-three larger account groups; a listing of these accounts will be found in the left-hand column of Table 1. It was felt that this degree of aggregation did not result in any serious elimination of information. A cross-section sample composed of twenty-five of the twenty-seven largest U.S. rail systems was used in the analysis; these twenty-five systems account for approximately two-thirds of the total of 110 Class I U.S. railroads. The two largest rail systems, the New York Central and the Pennsylvania, were excluded from the analysis when the cost functions were being statistically fitted. This exclusion was based on the grounds that these systems are so disproportionately large relative to the others that they would have had an overwhelming influence on the final results if they had been included. In other words, it was feared that these two systems constitute such extreme observations that any characteristics peculiar to them might have determined the over-all results if they had been included. The very smallest systems (explicitly those with less than 3,000 miles of total track operated) were eliminated from the statistical analysis because they would have introduced both nonlinearity and heteroscedasticity into the sample.[7] For analysis of the maintenance accounts, four-year averages over the years 1952 to 1955 were used both as dependent and independent variables in the cost function; this was done to eliminate as much as possible the influence of discretionary elements on the timing of these outlays. Two-year averages for the

[7] The elimination of the smallest and largest roads probably accounts in large measure for the absence of scale economies in the observed results of the rail passenger cost investigation. In the original study some adjustments were made for possible economies or diseconomies of large-scale operation when estimating costs for the New York Central and Pennsylvania but these have been eliminated from the results reported here.

TABLE 1

Comparison of Statistical and ICC Estimates of Passenger Costs for Joint Freight-Passenger Operation by Operation

(In Thousands of Dollars)

	Statistical Estimates without Size-Related Costs	Statistical Estimates with Size-Related Costs	Comparable ICC Full Costs
Maintenance of way and structure expenses:			
Way and structure overhead*	30,790	30,790	19,781
Stations and office buildings	12,400	27,422	15,516
Water and fuel stations	211	1,875	868
Roadway buildings, telephone and telegraph lines, signals and interlockers, miscellaneous structures	20,255	30,233	14,209
Shops and engine-houses	4,802	8,247	6,301
Power plants and transportation lines	274	1,153	4,844
Removing snow, ice, and sand	††	††	1,610
Public improvements	6,264	6,264	1,512
Yard switching tracks	2,811	9,268	2,494
Way switching tracks	††	††	85
Running tracks	22,707	106,205	69,805
Tunnels, bridges, and elevated structures	4,697	8,090	6,417
Maintenance of equipment expenses:			
Equipment overhead	29,837	29,837	33,574
Power plant machinery	—	1,214	2,163
Other locomotive repairs—yard	3,195	3,490	3,988
Other locomotive repairs—other	26,933	‡‡	100,699
Repairs, miscellaneous equipment	523	992	1,300
Traffic expenses	38,028	38,028	66,700
Transportation rail line expenses:			
Transportation rail line overhead	28,367	28,367	27,446
Dispatching trains	15,472	15,472	10,594
Station expenses	205,644	205,644	132,921
Yard overhead§	**	**	7,534
Yard labor	**	**	38,372
Yard material: fuel, lubricants, etc.	2,333	2,333	2,021
Engine-house expenses: yard	1,393	1,393	1,493
Engine-house expenses: road	47,017	53,517	22,394
Signals and interlocker operations	††	††	6,603
Communications systems operations	1,618	1,618	4,285
Crossing protection operations	††	††	1,207
Clearing wrecks, damage to property and livestock	868	868	1,310
Insurance and injuries to persons	28,430	31,932	16,625
General expenses	56,339	56,339	65,930

* Includes superintendence, roadway machines, small tools and supplies, injuries to persons, insurance, stationery and printing, other expenses, and right of way expenses.

† Includes superintendence, shop machinery repairs, dismantling retired shop and power plant machinery, injuries to persons, insurance, stationery and printing.

‡ Includes superintendence, stationery and printing, other expenses.

§ Includes yard masters and clerks, yard supplies and expense.

** The output variables that proved to have the only stable relationships with the expenses recorded in these accounts were also the output measures used by the ICC in making its allocations; since the functions also seemed to be reasonably homogeneous (i.e., constants were small), the statistical allocation would be essentially the same as the ICC's and the ICC full cost allocation was therefore accepted for these accounts.

†† The only variables that displayed a significant relationship with these expense accounts were geographic, size, or freight output variables. Therefore, no allocation of these expenses was made to passenger services.

‡‡ No reliable function was obtainable when the size variables were introduced. Since this was an "ambivalent" account for which the majority of roads' ICC solely related costs were dentical with ICC full costs, the ICC full cost estimate was accepted.

years 1954 and 1955 were used in the analysis of the other accounts. Price and output variations in these periods did not seem sufficiently large to justify price correcting the data.

The first step in the actual statistical analysis was to test explanatory variables that might conceivably influence a particular cost account. The "test" consisted of obtaining the simple correlation between potentional explanatory variables and related cost variables. Several nonlinear formulations also were tried at this stage in the proceedings but without any apparent improvement in the results.

Variables that were retained were then fitted, as a first approximation, into linear cost functions of the following general type:

$$E = a_1 + b_1 Q_f + c_1 Q_p + v \tag{I}$$

where E represents an expense account; Q_f indicates a freight output variable; Q_p designates a passenger output variable; a, b, and c are regression coefficients; and v is an error term. Such a simple statement of the cost relationship might be expected to be deficient in several respects. First, it may overlook the influence upon costs of such nonoutput variables as geographic, climatic, and population conditions. As a check for this possibility, variables measuring population density, degree of urbanization, summer and winter temperature levels, snowfall levels, etc., were tested and those recording a substantial level of relationship with any cost account were retained in the analysis. A second difficulty is that a simple formulation ignores situations in which there may be compelling physical reasons for different capital structures being used at different output levels or under different operating circumstances; also, possible differences in the ability of different size roads to adapt their capital structures to changed circumstances may obscure the interpretation of the simple functions. Furthermore, there clearly could be substantial differences in the amount of adjustment time needed to "escape" or reduce costs if the reduction depended not just upon the elimination of a service or output but also upon adapting the plant structure to the changed circumstances. For example, the effect upon rail costs of a reduction in passenger service might be broken down into two parts: an initial cost reduction immediately following elimination of the service, plant size held constant, and a later reduction attributable to a decrease in needed plant capacity. To take account of these and other possible capital structure difficulties, size variables were tested and introduced into the cost equations wherever they seem needed. As might have been expected, the need appeared most frequently in the maintenance accounts. Different size variables were used for different cost accounts; illustrative examples are miles of track, miles of roadbed, number of interlock switches, and number of passenger cars.

When modified to take account of these additional variables, the generalized cost function shown above took the following form:

$$E = a_2 + b_2\ Q_f + c_2\ Q_p + dG + eS + w$$

where G designates variables of the geographic, climatic, or population type; S indicates size variables; d and e are additional regression coefficients; and w is now the error term. The additional variables, those of the G and S type, can have a systematic influence on the expense function only under certain conditions: specifically, there would need to be a systematic relationship between v, the error term in the simple cost function, and expenses; or between the G and S type variables and the output variables, Q_f and Q_p. Relationships of this latter type possibly could "bias" the estimates of the regression coefficients, b_1 and c_1. From the standpoint of the present study, the important consideration is what the introduction of the G and S variables does to the regression coefficients associated with the passenger output variables; that is, how much c_2 differs from c_1.

There remains the problem of interpreting any such changes in the c coefficients. Modifications induced by the introduction of the G type variables present no serious difficulty. The G variables clearly represent the kind of extraneous influences that might give rise to "misleading spurious correlations," as described in the previous section; changes in the c coefficients caused by their introduction therefore should reflect changes created by the elimination of such unwanted influences.

It is substantially more difficult to assess changes created by the introduction of the size variables. As noted, the introduction of size variables will have an influence on cost coefficients when there exist such conditions as technical reasons for using different capital structures at different scales of output or differences in the ability of large and small roads to adapt their capital structures to changed circumstances. Assuming positive relationships between output, size, and costs, the introduction of the size variables will reduce the output coefficients. If these reductions are attributable to the first set of causes, they are properly counted as avoidable or escapable costs of either freight or passenger service; thus reductions in the c coefficients attributable to different capital needs at different scales of output should not be eliminated from passenger cost estimates.[8] On the other hand, reductions

[8] The existence of different capital needs at different output levels could be described by a simple cost structure of the following form.

Let $$E = a_1 + b_1\ O + cS$$
and $$S = a_2 + b_2\ Q$$
where Q indicates an output variable, E expenses, S a capital size variable, and a_1, b_1, c, a_2 and b_2 are cost coefficients.

Then $$E = a_1 + ca_2 + (b_1 + cb_2)\ Q.$$

in the regression coefficients due to different size roads having different abilities to adapt capital structure to changed circumstances are properly eliminated from the cost estimates. These are essentially extraneous influences that are not wanted in the output cost estimates.

Actually, there is no important evidence to suggest that substantial differences exist in the ability of large and small roads to adapt capital structure to changed circumstances. There is, though, perhaps some tendency for the large roads to be more sluggish than the small roads —due, possibly, to greater bureaucratization and sensitivity to regulatory pressure.

In sum, reduction in the c coefficients incurred by the introduction of the size variables will reflect somewhat heterogenous influences. Some of the reduction will be desirable in the sense of eliminating unwanted influences while some will be undesirable in the sense of eliminating costs that are properly attributable to a particular rail service. It is therefore reassuring to find that the inclusion or elimination of these size influences makes only an approximate 6 per cent difference in the total estimate of passenger operating costs. (This 6 per cent difference is based on computations using total figures for all operating accounts, including those which have not been statistically analyzed here.) The differences for particular accounts, however, can be substantial as shown in Table 1. According to the above argument, the proper estimate of the total escapable costs of passenger service would lie somewhere between the two figures with the likelihood strong that the true figure is closer, particularly in the long run, to the sum when size costs are included than when they are not.

A note should be inserted about the interpretation of the regression constants in the statistical cost functions. These are easily interpreted if positive. Assuming that in the long run all costs are variable and that a cross-section reflects long-run influences, the constant is attributable to nonlinearity (caused by increasing returns) in the lower portion of the cost curve. The constant, then, could be construed as a rough estimate of the cost level that must be reached before the linear and essentially more efficient cost function associated with the medium-large rail systems analyzed in this study can be attained. Negative constants are more difficult to explain and fortunately were not too common in the study results. A negative constant implies either that there are decreasing returns to scale or that the regression coefficients have been

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Thus, the costs associated with output Q can be broken down into two parts:

b_1 = "directly variable" output costs per unit of output;

and cb_2 = "investment variable" or size-related variable costs per unit of output. Of course, the possible existence of other relationships between size and output, as described in the text, obscures this simple interpretation.

overestimated, due, say, to indeterminacy caused by multicollinearity. Since the size and output variables often were closely related and the negative constants usually appeared after the introduction of the size variables, the second possibility seems quite likely. Such an interpretation is also more in agreement with available information indicating increasing returns are more often the case in railroading than decreasing returns. Furthermore, in the interests of conservatism (i.e., of keeping already large estimates of rail passenger costs as small as possible), it seemed wise to attribute the negative constants to overestimation of the regression coefficients. To take account of the negative constants when they appeared, therefore, a rough estimate was made of the extent to which the regression coefficients would have to be reduced to force the cost functions through the origin. A better procedure, clearly, would have been to refit the statistical functions subject to the constraint that the constant equal zero but time and resources precluded this more formal treatment. Since negative constants were mainly encountered after introduction of the size variables, these adjustments primarily enter the estimation procedure only when segregating the size-related costs. This is still another reason for placing greater confidence in the cost estimates with the size costs included than without such costs.

The results obtained from applying the statistical estimation procedures are shown in Tables 1 and 2. In Table 1 the passenger cost allocations are presented for the 33 accounts that were statistically analyzed. The account entries are totals across all the 25 systems included in the regression analysis plus the New York Central and Pennsylvania. Two estimates of the statistical cost totals are provided: one with the size-related costs included (but with the influence of the *G* type variables eliminated), and one without the size-related costs. For purposes of comparison the comparable ICC full costs of passenger service are also given. Table 2 lists estimates of total passenger operating expenses in these 33 "sensitive" accounts by system; again the comparable ICC estimate of full costs of passenger service are provided for comparison. It is clear from Tables 1 and 2 that the statistical approach tends to increase the costs assigned to passenger service in the "joint operation accounts." This, in turn, suggests a higher over-all estimate of rail passenger costs for virtually every system included in the study. If, in fact, these statistical cost figures are used to make an estimate of what the ICC calls "net revenue from railway passenger operation," the over-all deficit for Class I roads is increased by roughly 18 to 28 per cent.

Policy actions based upon these results should not be too precipitously undertaken, however, for at least two major reasons. In the first place, statistical costs by their very nature are historical costs, which

TABLE 2

COMPARISON OF STATISTICAL AND ICC ESTIMATES OF PASSENGER COSTS FOR JOINT FREIGHT-PASSENGER OPERATIONS BY RAILROAD SYSTEM*

(In Thousands of Dollars)

	Statistical Estimates without Size-Related Costs	Statistical Estimates with Size-Related Costs	Comparable ICC Full Costs
Boston Maine	11,503	13,622	12,532
New Haven	23,356	30,272	27,146
Erie	10,728	13,148	10,325
New York Central	84,872	114,410	96,904
Nickel Plate	2,208	3,190	2,156
Pennsylvania	88,808	125,439	106,665
Baltimore and Ohio	16,840	23,403	23,562
Reading	12,023	14,808	13,092
Chesapeake and Ohio	7,973	10,386	10,191
Norfolk and Western	6,061	7,419	7,029
Atlantic Coast Line	30,022	40,090	31,032
Gulf, Mobile and Ohio	3,425	4,613	4,261
Illinois Central	21,852	26,553	21,802
Seaboard Air Line	12,431	16,814	12,632
Southern	22,546	29,409	22,311
Chicago and North Western	24,909	30,764	24,183
Milwaukee	18,602	24,865	18,493
Great Northern	16,394	21,595	20,268
Northern Pacific	11,454	15,021	12,770
Santa Fe	49,446	66,531	45,967
Burlington	28,911	36,398	23,214
Rock Island	18,736	24,288	18,288
Southern Pacific	39,220	53,853	48,050
Union Pacific	37,637	51,953	43,890
Frisco	7,629	9,407	8,048
Missouri-Kansas-Texas	6,052	7,960	5,684
Missouri-Pacific	23,476	30,985	24,749
Totals	637,114	847,196	695,244

* The joint operation accounts aggregated here by system are the same as those reported in Table 1.

may be more indicative of what was the situation and what should be corrected than of what will be the situation, particularly if remedial action is taken. Second, greater confidence would reside in the statistical findings if they were borne out by results obtained from controlled experiments; e.g., checking the track maintenance outlays needed on two tracks, identically situated, one of which is used and one which is not. The importance of obtaining correct estimates of rail passenger costs in designing public transportation policy suggests that such experiments would be justified even if expensive.

In short, there is no intention of advocating here any one solution to the so-called "rail passenger problem." In particular, there is no desire to imply that the existence of a substantial rail passenger deficit automatically indicates that there should be wholesale abandonments of

rail passenger services. There are many methods by which any deficit possibly might be eliminated; e.g., use of different pricing methods, consolidation of duplicating services, better employment of equipment, elimination of unnecessary and perhaps largely unwanted "service frills," etc. (Gerald Kraft, one of the coauthors of the original Aeronautical Research Foundation report, is, in fact, now studying many of these possibilities as part of the work on his doctoral dissertation.) In addition, even if passenger costs and revenues cannot be brought into balance, there might be important reasons of public policy for continuing certain passenger services, at least into the immediate future.

V

The principal point of the preceding discussion is the simple yet oft-overlooked one that different methods of determining costs are likely to be more or less applicable in particular situations. Simple, single-product, low fixed cost operations usually will be adequately treated by conventional accounting techniques. Complex, multiple-product, high-overhead cost operations, on the other hand, normally will require either statistical analysis of the historical cost experience or controlled experimentation if the constituent expenses are to be determined with any reasonable degree of accuracy. Controlled experimentation or statistical procedures are necessary in these more difficult cases because direct observation of the effect upon costs of a change in output is usually impossible under such circumstances.

To illustrate the point, a report was presented of a study made into the determinants of rail passenger costs. The first step in this analysis was to segregate rail cost accounts into those that appeared amenable to conventional accounting treatment and those that did not. The latter were then analyzed by statistical procedures. The results of that analysis suggest that conventional procedures tend to underestimate the full escapable costs of rail passenger operations.

A MARGINAL COST FUNCTION FOR HIGHWAY CONSTRUCTION AND OPERATION*

By Allen R. Ferguson
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The purpose of this study is to develop a cost function adequate for assigning highway costs to various classes of vehicles. Costs are defined merely as expenditures of the highway department in the construction and operation of the highway system. The study was originally prepared in 1953 for the Virginia Highway Users Association in connection with legislative hearings on highway taxation in the state of Virginia. The data used are fiscal 1952 data for that state. Consequently the numerical results are of little general interest, except as a means of illustrating the method.

The method of analysis is, itself, conceptually very simple. Obviously one would like to identify characteristics of economically significant groupings of vehicles and determine the partial derivative of costs with respect to each and then assign this cost and an appropriate share of the joint costs to each vehicle class. The only methodological problems are determining what these characteristics are and particularly relating them to costs. Where no such relationship can be identified adequately to assign particular costs, those costs must be assigned arbitrarily or not at all. Usually in an empirical cost study one is testing some hypothesis and by judicious use of the a fortiori prerogative can resolve this problem. In effect this study was testing the hypothesis that "trucks are compensating the State adequately for the highway costs incurred in their behalf." Therefore, it was possible to cut through some of these knotty problems simply by allocating such costs to the heavy vehicles.

Background

Before proceeding with the discussion of the method it is necessary to provide some skeleton of background information. The state highway system in Virginia (the study excluded city highway problems) consists of a primary system, divided into four classes, and a secondary

* In the preparation of this study I received invaluable help from the staff of the American Trucking Association. I am particularly indebted to Mr. William Bresnahan, Mr. Edward Kiley, and especially to Dr. Richard A. Staley. Some of the necessary engineering information and analysis were provided by J. Steven Watkins & Associates, of Louisville, Kentucky. The staff of the Virginia Department of Highways, particularly Mr. Howard Morecock, provided a great deal of data and were very co-operative in answering questions and explaining the Department's procedures and practices.

system. The latter consists of what in many states is the county road system—the farm to market, rural school net. In the primary system Classes 1 and 2 are the heavily traveled roads, averaging more than 1,500 vehicles per day.[1] Class 1 roads have substantial truck traffic; Class 2 roads do not. Classes 3 and 4 are less heavily traveled.

The major categories of highway expenditure in 1952 in millions of dollars were:

Pavement	$25
Grading and drainage	11
Structures	5
Joint Costs	40
	$81

The vehicles were classified by gross weight and the classes with their major relevant characteristics are shown in Table 1.

TABLE 1

VEHICLE CHARACTERISTICS

Vehicle Groups	Maximum Axle Load Frequently Encountered (Pounds)	Annual Mileage Traveled (Millions)	Number of Registered Vehicles (Thousands)
1. Passenger cars	2,500	8,505	836
Trucks, grouped by gross weight in pounds:			
2. Up to 10,000	7,500	920	115
3. 10,001–16,000	12,000	296	23
4. 16,001–24,000	16,000	504	25
5. 24,001–35,000	16,000	95	3
6. 35,001–40,000	18,000	246	6
7. 40,001–50,000	18,000	243	4
Totals		10,809	1,019

SOURCES: Gross weights are registered gross weights. Axle loads for each group are estimates based upon "loadometer" studies made by the state which show axle weight and gross weight of a large sample of vehicles and upon distribution of registered weights within the groups and engineering estimates of reasonable distribution of the gross weight among the axles. Mileage for each group was estimated on the basis of Bureau of Public Roads data and studies in other states.

In general the approach is to determine engineering relationships between vehicle characteristics and various categories of inputs into highway construction, maintenance, and other activities. Only if the state's design procedures are standardized and take account of vehicle characteristics can the method be used. Gross weight, axle weight, and mileage are the major relevant variables.

The marginal—or incremental—approach encounters three chief

[1] All highway department rules and practices used are those in effect in 1952 in Virginia.

kinds of difficulties: data problems, the problem of the appropriate capital charge, and some unresolved engineering problems.

With regard to data problems, highway data often are incomplete and inaccurate or, at least, too highly aggregated to permit making use of a good theoretical structure even if one can be developed.

In Virginia, highway accounting appears to be very good; adequate general cost figures were readily obtained. Further, the Highway Department made available all the contract bids which had been accepted in 1952—207 bids with up to 50 line items per bid. The line items identified detailed inputs and provided contractors' estimates of the dollar cost of each. Thus for a key part of highway expenditure there was adequate detail for almost any sorting or grouping of costs.

One unresolved data problem is that, although the data report maintenance and construction costs separately, it is impossible to distinguish operationally between the two in many cases. Heavy maintenance is often both repair and improvement. Further, repair is a substitute for construction in two ways. The highway engineers' sins of underdesigning are expiated through later maintenance expenditures. On the other hand, "overmaintaining" can postpone reconstruction and can introduce improvements. In this study, maintenance and construction costs were separated or combined on an *ad hoc* basis in connection with each of the major types of expenditures shown above.

To determine capital charges against the historical investment in the highways and to assign them to the different classes of users is an extremely difficult problem because of changes in price levels, the indefiniteness of the economic life of the roads, incomplete and inconsistent cost records, the question of the appropriate interest rate, and all of the usual problems. In the present study, these problems are circumvented by dealing with current costs—both operating and capital costs. In the case of Virginia there was no highway indebtedness and hence no interest payment to allocate. More important, since the system was being maintained well enough to avoid any apparent net deterioration and since the highway system was expanding, the current capital expenditures presumably equaled or exceeded the appropriate capital charge on the historical investment. Other investigators might well consider the advantages of dealing with current capital outlays, especially if several recent years' data are available rather than plunging into the quagmire of estimating the historical or present value of investment.

The third set of difficulties in the marginal cost analysis arises from the fact that many key problems of highway engineering have not been rigorously solved. They involve questions such as: (1) to what extent should commercial vehicles in the traffic stream influence the building

of multi-lane highways; (2) how much wider should highway lanes be to accommodate trucks and buses; (3) how much thicker should pavements be to accommodate heavier vehicles; (4) to what extent should the presence of trucks and buses influence curvature and gradient standards; and (5) to what extent should differences in vehicle sizes and weights influence the design of bridges.

All of these are most difficult if one is interested in what the theoretical answer should be, but these are questions that the practicing highway engineer faces and solves routinely.

The economic problem is not how costs should be distributed if highways were built in accordance with sound theoretical solutions to these questions, but how should the costs of highways as they are actually built be distributed. If one used "correct" solutions to the engineering problems, he would get the wrong solution to the economic problem unless the engineers were building the roads upon the basis of the same "correct" solutions. For this study, it was necessary to determine only what solutions and approximate solutions were in fact applied by the Highway Department in designing and constructing roads in Virginia. This was done and provides answers adequate for a practical marginal cost function.

The Determinants of Cost

The costs will be discussed in order: pavement, grading and drainage, structures, and joint costs.

Pavement. Pavement costs account for about 30 per cent of the 1952 appropriations. (The table showing detailed costs had to be omitted for lack of space.)

In addition to the primary system construction costs, the costs of both primary and secondary system maintenance will be allocated here. Pavement construction costs of the secondary system are treated as joint costs because, except for some structure cost, none of the secondary system construction costs are considered to be assignable exclusively to heavy vehicles. The reasons for this are: trucks use the Virginia secondary system relatively little; it is almost entirely of local importance; and it is not built for heavy vehicles (only 34 per cent of it was hard-surfaced as of June 30, 1952).

Three aspects of pavement—thickness, width, and type of surface—substantially control its cost, given factor prices and the state of technology. In Virginia both flexible (blacktop) and rigid (concrete) pavements are used on the primary system, although flexible predominates by a wide margin.[2]

[2] As of December 31, 1951, 5.7 per cent of the paved primary highways in Virginia were portland cement concrete and an additional 3.4 per cent were dual type. The remaining 90.9 per cent had flexible type surface.

Two aspects of width are relevant: width of the individual lanes and the number of lanes. In the absence of clear-cut rules governing the width to which roads are to be constructed, rational determination of the effects of different types of vehicles upon the design of and hence upon construction and maintenance costs of highways would be impossible. Fortunately in Virginia there are such rules.[3] The number of lanes is related solely to the volume of traffic, but on roads heavily traveled by trucks the lanes are to be one foot wider than they would otherwise be. Therefore, it was possible to allocate appropriate portions of the construction and maintenance cost of the Class 1 roads to the trucks on the grounds that without them the lanes would have been 11 rather than 12 feet wide.

With regard to pavement costs, a factor of one-twelfth is applied to surface and a factor of one-thirteenth is applied to "subbase" expenditures. A total pavement width increment of $602,803 is obtained and is allocated on a mileage basis to all trucks with a gross weight in excess of 10,000 pounds as shown in Table 2, column 1.

TABLE 2

ALLOCATION OF PAVEMENT COSTS
(Thousands of Dollars)

Class and Gross Weight of Vehicles	Width Incremental Costs	Other Construction Costs	Maintenance Costs	Total Pavement Costs
	(1)	(2)	(3)	(4)
1. Passenger Cars		$ 6,121	$ 4,934	$11,055
Trucks:				
2. Up to 10,000		662	533	1,196
3. 10,001–16,000	$129	769	1,239	2,137
4. 16,001–24,000	219	2,207	2,266	4,692
5. 24,001–35,000	41	415	426	882
6. 35,001–40,000	107	1,401	1,162	2,670
7. 40,001–50,000	106	1,390	1,153	2,649
Total	$603	$12,966	$11,715	$25,284

There remains the problem of determining how much of the pavement thickness is the responsibility of the heavier vehicles. The determinants of what the thickness of pavement should be is one of the problems in engineering which is not entirely resolved, but the practicing engineer has understandably shown a reluctance to wait for the ideal solutions and has in fact been designing and building highways for some time. There are design standards which relate thickness to axle loads in a roughly linear fashion, but there is a minimum practical thickness for any densely traveled road without regard to vehicle

[3] *Geometric Design Standards* (Virginia Department of Highways, August 1, 1944; revised June 1, 1947).

weight. It appears that six inches is a reasonable minimum for Virginia, but this is a value which should be determined in each individual study, of course. Then roughly, Virginia practice calls for a pavement thickness of six inches plus 0.4 per 1,000 pounds of axle weight in excess of 7,000.[4]

By making the simplifying assumption that pavement costs are proportional to thickness, it is an easy matter to allocate them to various classes of vehicles categorized by axle weights. Since the six-inch minimum depth equals about six-tenths of the thickness required for the heaviest vehicles, 60 per cent of the primary system pavement costs were assigned on a mileage basis to all vehicles. Each increment over six inches was similarly charged to all vehicles for which the road would have been inadequate had not that increment been added. The allocation is summarized in column 2 of Table 2.

It is worth noting in passing that not only does thickness increase less than in proportion to axle loads but, because highway regulations require increased numbers of axles as gross weights increase, the effect of gross weights upon pavement thickness is even less direct.

No comparable statement of the determinants of maintenance costs is possible. The factors having major influence upon pavement maintenance appear to be large in number and difficult to analyze. Three classes of maintenance expenditure were treated differently. As explained above, heavy maintenance has much in common with construction. Consequently maintenance expenditures on primary system pavement were treated as being equivalent to construction and were allocated in proportion to pavement construction costs. Ordinary (light) maintenance on both the primary and secondary systems was allocated among all vehicles on a mileage basis. Heavy secondary system maintenance is a difficult case. The secondary roads are not designed for heavy vehicles and are little used by them. However, apparently a significant fraction of the heavy maintenance requirements is generated by the occasional use of these roads by heavy vehicles. Therefore some fraction of the heavy maintenance cost is chargeable to trucks. To estimate this fraction would require a much more detailed analysis of maintenance activities than was possible. Consequently, to make an a fortiori case they were allocated entirely to the trucks.

The resultant distribution of pavement maintenance costs is shown

[4] Slightly more accurately, Virginia practice is to build a minimum pavement of six inches for axle loads up to about 7,500 pounds; of eight inches for loads up to 12,000 pounds; nine and one-half inches for up to 16,000 pounds; and ten inches for up to 18,000 pounds (the legal limit). *Virginia's Method of Conducting CBR Tests and Designing Flexible and Rigid Pavements* (prepared by Division of Tests, Soils Laboratory, Virginia Department of Highways), p. 14.

in column 3 of Table 2. The total distribution of pavement costs is shown in column 4.

Grading and Drainage. The next major component of highway costs is grading and drainage, which amounted to 11 million dollars or 13.5 per cent of the total highway costs. Three types of activity are here classified as grading and drainage: preparatory work, such as clearing and grubbing and excavation; drainage facilities, such as culverts, pipe, etc.; and shoulders. Shoulders have some of the characteristics of pavement and some of grading and drainage facilities; no particular significance attaches to their being classified as grading and drainage. (Table showing grading and drainage costs in some detail had to be omitted for lack of space.)

Three factors affect the grading and drainage expenditures: width, gradient, and weight. Their effects will be discussed in that order.

As was mentioned above, on truck routes there is an extra foot of width per lane. The total width of the roadway which must be graded and drained is assumed to be 48 feet (two 12-foot lanes, two 8-foot shoulders, and two 4-foot ditches[5]). Therefore, 4 per cent of the grading and drainage construction cost of Class 1 roads were taken as an increment assignable to the trucks weighing more than 10,000 pounds. This totaled $165,170.

Truck routes in Virginia are built to somewhat higher standards of gradient than are the Class 2 roads.[5] The effect of this difference in gradient upon grading costs is very difficult to measure. For this study the 1952 excavation costs per mile on a sample of Class 1 roads were compared with those on a sample of Class 2 roads. On Class 1 the costs were roughly double those on Class 2.[6] The gradient increment of 1.6 million was found on this basis and combined with the width increment was distributed to all trucks over 10,000 pounds gross weight (column 1, Table 3).

The remaining increment deals with shoulders, and the determination of the truck responsibility in this case is peculiarly difficult. Heavy vehicles influence the cost of shoulder upkeep or construction because of the pressure of their wheels when they run off the main pavement. However, the friction of passenger car wheels is also a factor, as is weather. The problem is further complicated by the fact that the basic data on maintenance do not list shoulder expenditures separately. Arbitrarily, 25 per cent of the primary system grading and drainage costs other than excavation were taken as a truck increment to take account of the facts that some shoulder maintenance would be neces-

[5] *Geometric Design Standards.*

[6] The sample consisted of 26½ miles of Class 1 and 27½ miles of Class 2 two-lane roads. *Ibid.*

sary in the absence of trucks, that the maintenance of drainage and entrances appears to be largely independent of truck traffic, but that trucks cause some of the shoulder expenditures. A total "shoulder" increment of $990,866 was developed in this way and distributed on a mileage basis as in column 2 of Table 3. The remaining (nonincremental) portions of the expenditures shown in Table 3 are allocated among all vehicle classes (column 3). The full allocation of grading and drainage costs is shown in column 4.

TABLE 3

ALLOCATION OF GRADING AND DRAINAGE COSTS
(Thousands of Dollars)

Class and Gross Weight of Vehicles	Width and Gradient Incremental Costs	Shoulder Incremental Costs	Basic Grading and Drainage Costs	Total Grading and Drainage Costs
	(1)	(2)	(3)	(4)
1. Passenger Cars			$6,499	$ 6,499
Trucks:				
2. Up to 10,000			703	703
3. 10,001–16,000	$ 377	$212	226	816
4. 16,001–24,000	640	361	385	1,386
5. 24,001–35,000	120	68	72	261
6. 35,001–40,000	312	176	188	676
7. 40,001–50,000	310	174	186	670
Total	$1,760	$991	$8,259	$11,010

Structures. About 6 per cent of the highway expenditures go into structures; i.e., bridges. The bulk of the expenditures is for primary construction.

In any one year, of course, structure costs could be dominated by one or two major projects. Fortunately in 1952 this was not the case; there were data on 145 spans on some 40 bridges.

In the design of bridges two characteristics are influenced by the presence of commercial vehicles: width and strength.

The geometric design standards call for no difference in clearance related to commercial traffic. However, the extra foot of pavement width on Class 1 highways is carried over into the allocation of structure costs.

The chief components of structures are steel, structural concrete, surfacing, materials, piling, rip rap, and excavation.

In Virginia it is standard practice to build H15 bridges on the secondary system and H20 bridges on the primary system with H20-S16 bridges on the interstate-intercity routes. H15 bridges are provided on the secondary system, despite the fact that virtually all the traffic on the secondary system is less than 15 tons gross weight, because the

secondary system bridges are used occasionally by heavy trucks and by heavy farm equipment. In the absence of trucks and other heavy vehicles, it is the informal opinion of engineers in the Department of Highways that H10 bridges would be adequate, and it is not practical to build to lighter design because of excessive maintenance costs and structural instability.

The problem then reduces to evaluating both the added cost of building and maintaining the two extra feet of width on the bridges on Class 1 roads and also to evaluating the extra cost of bridges on both the primary and secondary roads due to the presence of the H15, H20, and H20-S16 bridges rather than the minimum H10 bridges. Roughly an H10 bridge is adequate for up to 10 tons gross load, H15 for 15 tons and H20 and H20-S16 for loads up to the legal limit of 50,000 pounds.

Different width increment factors are applied to different parts of the bridge expenditures for reasons explained in each case. The width increment is taken as the responsibility of all trucks over 10,000 pounds and is allocated among them on a vehicle mileage basis. The width increment is computed for the replacement, maintenance, and construction expenditures for the Class 1 roads where the data permit separating Class 1 from the rest of the primary system.

For Class 1 superstructure construction a factor of 9.3 per cent was computed by J. Stephen Watkins, Consulting Engineers, from Kentucky Standard H20 reinforced concrete deck-girder bridges of three 45-foot spans, with two abutments and two 20-foot high piers. The factor was obtained by determining the amounts of Class "A" and "D" concrete and reinforcing steel that would be required for 22-, 24- and 26-foot roadways, and applying unit prices to each of the amounts. The added cost of the 26-over and the 24-foot width has been used throughout the width increment computations.

A factor of 4.0 per cent was obtained in the same manner for a substructure construction width increment.

It was assumed that substructure maintenance expenditures on Class 1 bridges are increased in proportion to the increased width since most maintenance is caused by weathering and other nontraffic forces. A factor of 7.7 per cent is the ratio of the two extra feet to the assumed width of 26 feet.

The weight increment is computed as an estimate of the added expense of increasing the design stress of bridges above H10. Estimates of the added cost of an H20 bridge over an H15 and an H10 were prepared by J. Stephen Watkins, Consulting Engineers, on the basis of an analysis of bridge design. An increment factor of 20 per cent was found for the added cost of an H15 over an H10 and this factor was applied to the total bridge construction costs of all systems. This

increment was distributed as the responsibility of trucks with a gross weight of more than 20,000 pounds. An increment of 33⅓ per cent was estimated for H20 over H10 bridges and hence an additional 13 per cent of the cost of the primary system bridges was taken as the responsibility of all trucks with a gross weight of more than 30,000 pounds.

The basic cost of the bridges is the total cost of superstructure and substructure construction and substructure maintenance and replacement minus all incremental costs. It is allocated to all classes of vehicles on a mileage basis.

TABLE 4

ALLOCATION OF STRUCTURE COSTS

(Thousands of Dollars)

Class and Gross Weight of Vehicles	Incremental Costs						Basic Structure Costs	Totals
	Width	Superstructure Construction		Substructure Construction		Maintenance		
		To Accommodate Vehicles of More Than 10 Tons	Additional to Accommodate Vehicles of More Than 20 Tons	To Accommodate Vehicles of More Than 10 Tons	Additional to Accommodate Vehicles of More Than 20 Tons			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Passenger car..							$2,111	$2,111
Trucks:								
2. Up to 10,000..							228	228
3. 10,001–16,000	$17					$170	74	260
4. 16,001–24,000	29	$177		$174		288	125	794
5. 24,001–35,000	6	33	$ 28	33	$ 30	54	24	207
6. 35,001–40,000	14	86	72	85	78	141	61	537
7. 40,001–50,000	14	85	71	84	78	139	60	533
Total.....	$80	$382	$171	$376	$186	$793	$2,683	$4,671

Although many types of maintenance are caused by weather and general traffic, the costs of superstructure maintenance and replacement on the primary system were allocated 100 per cent to trucks because on some types of bridges they appear to cause a large proportion of surface failures. Table 4 allocates the width and weight increments and the basic costs among the vehicle classes.

Joint Costs. About 40 million dollars, nearly 50 per cent of the total, remains to be allocated. (Some detail of these expenditures is available. This table also had to be omitted because of space limitations.) Of this some 16 million dollars, consisting of expenditures for right of way of 5 million dollars, department of state police of 3 million, highway traffic and planning of 2 million, and undistributed primary system construction and maintenance of 6 million, appear to be appropriately distributed on the basis of vehicle miles.

Another 15 million dollars, consisting of 2.9 million in aid to cities and 12.3 million in secondary system costs not covered elsewhere, might well have been excluded from the analysis because they are charged to the State Highway System only because of the particular institutional arrangements in Virginia. Indeed, the whole question of the economics of the local county roads is, in my opinion, better considered a matter of rather general rural welfare economics than as transportation economics in a conventional sense.

For the remaining 9 million dollars one could argue that any of several reasonable methods of allocation could be used. They were distributed on the basis of mileage.

Table 5 is a summary of all the preceding tables, showing the total

TABLE 5

SUMMARY ALLOCATION OF COST RESPONSIBILITY
(Thousands of Dollars)

Class and Gross Weight of Vehicles	Pavement Costs	Grading and Drainage Costs	Structure Costs	Joint Costs	Total Cost Responsibility
	(1)	(2)	(3)	(4)	(5)
1. Passenger cars	$11,056	$ 6,499	$2,111	$31,600	$51,265
Trucks					
2. Up to 10,000	1,196	703	228	3,418	5,546
3. 10,001–16,000	2,137	816	260	1,100	4,324
4. 16,001–24,000	4,692	1,386	794	1,905	8,777
5. 24,001–35,000	882	261	207	362	1,712
6. 35,001–40,000	2,670	676	537	937	4,821
7. 40,001–50,000	2,649	670	533	930	4,783
Totals	$25,284	$11,010	$4,671	$40,265	$81,230

cost responsibility of all classes of vehicles for total highway expenditures. It shows a recapitulation of all the cost allocations made previously and in addition provides the allocation of the joint costs. Column 6 shows an assignment of 30 per cent of the total costs to the trucks over 10,000 pounds gross. Of the remaining 70 per cent, about 7 per cent is the responsibility of the small trucks and 63 per cent is the responsibility of the passenger cars. Just under 12 per cent is assigned to the heaviest classes of trucks—those grossing 35,001-50,000 pounds.

Concluding Remarks

Highway costs are a function of vehicle gross weight, affecting structure costs; of axle weight, affecting pavement costs—and axle weight is related to gross weight; vehicle miles, affecting many of the "joint

costs" and "basic costs"; and truck miles which influence grading and drainage and some structural maintenance costs, although probably these costs are in fact rather insensitive to truck mileage. A large fraction of the costs appears to be insensitive to vehicle characteristics.

This leads one to some interesting speculations. What, for example, would be the impact on highway costs of very large increases in truck or bus weights and sizes? Structure costs constituted only 6 per cent of the costs analyzed and increase much less than in proportion to gross weight. Even pavement costs—amounting to some 30 per cent of the total—increase far less than in proportion to axle weight which in turn increases less than in proportion to gross weight. Given the further fact that pay load increases more than in proportion to gross weight, there are some interesting possibilities to contemplate.

DISCUSSION

GEORGE H. BORTS: For the purposes of criticism Mr. Johnston's[1] paper falls into three sections. In the first, he correctly shows how bias may creep into the estimated cost function through attempts at correcting either total cost or factor inputs for the relative changes in factor prices. This bias is discussed in terms of the curvature or linearity imposed upon the true cost function. While it may appear that curvature has a clear meaning to the unmathematical, the concept loses precision when the function changes the value of its slope and its ordinate at the same time that it changes the value of the second derivative. Out of curiosity I resorted to a calculus book and discovered that in terms of the first and second derivatives of $f(x)$, [$(f'(x)$ and $f''(x)$, respectively], curvature K is defined to be:

$$K = f''(x) \,/\, [1 + f'(x)^2]^{3/2}$$

I presume this definition takes into account the fact that the function changes ordinate and slope at the same time that it changes its second derivative. I suggest that if the curvature of any function is under discussion, this definition, or any other good one, for that matter, be given so that the reader can verify the author's conclusions.

A more fundamental criticism of the author's presentation can be made from the point of view of the economist. Why bother about curvature at all? An investigator who wishes to know the degree of increasing returns should wish to investigate the elasticity of the cost function and the way in which the different adjustments Johnston describes affect the estimate of elasticity. In this way we would know whether such and such an adjustment increased or decreased the extent to which costs are estimated to vary relative to output. Elasticity of cost is defined as the ratio of marginal to average cost; and it would be easy to derive these from Johnston's function and translate his ideas on bias into effects on elasticity.

The second major section deals with an attempt to show how the use of accounting data may bias the estimated cost function when the period for which accounting data are collected encompass a number of so-called "economic" time units. That is, the short-run cost function may hold true for time periods much shorter than that for which accounting data is collected. Johnston discusses the issue that if output is unevenly distributed throughout the accounting time period, the use of the average rates of cost and output assumes a linear cost function and biases the statistically estimated cost function towards linearity. It has also been pointed out though not discussed in this paper that the uneven distribution of output may lead to a biased estimate of increasing returns because of the large capital fixtures required to satisfy peak output rates.

Johnston attempts to show by a mathematical proof that accounting data are

[1] This paper is to be published in the *Rev. of Econ. and Statis.*, Nov., 1958.—EDITOR.

generally more powerful than economic unit period data in isolating the curvilinearity of the cost function. I think he has made a number of peculiar assumptions in his proof which severely limit its usefulness. For example, it is not clear that he introduces into expression (25) the fact that there are nN accounting observations if there are N unit period observations. It does not make too much sense to compare equal numbers of accounting and unit period observations. Further, assumption (26) from which his major results follow (this guarantees that $S^2 = n^2S^2x_i$ and $p = r$) imposes more stringent restrictions on x_i and X than he is willing to admit. If $X = nx$, how can I observe a value of x_i that is unequal to some X/n? Therefore, the actual magnitude of variation in x_i is excluded from affecting his result.

The third and possibly most controversial section of Johnston's paper deals with the so-called "regression fallacy" and its influence on estimates of increasing returns. While the fallacy is not defined, I should like to offer the following definition as it applies to this problem. Suppose we have a true cost function $C = \alpha X + B$, and we wish to estimate α from a cross-section sample of observations. It has been argued that the least squares estimate $a = S_{cx}/S^2_x$ has a downward bias because of a transitory output component which overstates S^2_x. Now Johnston has correctly argued that if costs and output are directly variable in the short run, the transitory output component will raise Scx by as much as S^2_x; leaving a unaffected. Those who still believe in the distorting effects of the regression fallacy must argue that while economic costs may be directly variable in the short run, they will not be observed to be such due to the nature of accounting data. For example, in the short run user capital costs may be directly variable with output without any possibility of observing such. A good example of this is to be found in the user cost of railway equipment. While an increase in traffic may appear to call forth a less than proportionate increase in expenditures in the short run, actual costs may rise considerably because of wear and tear on equipment which is not immediately made good. In no sense is this a fixed cost in the short run.

For some reason Johnston tends to play down the possible error which such a fallacy might introduce into the cost function, though he recognizes possible means of avoiding its influence. In addition to the methods he suggests there are a number of others which might be fruitful:

1. Take the regression of output on cost. The estimate of this parameter $\lambda = S_{cx}/S^2_c$ is presumably independent of S^2_x. Its inverse $1/\lambda$ can be checked to see if increasing returns prevail.
2. Take an average of several yearly values of cost and output for each firm to eliminate so-called "transient" output effects.
3. Examine α for several industries to see whether, as the theory suggests, it will be smaller for industries experiencing wide cyclical or seasonal fluctuations in the output pattern.

Mr. Meyer's paper is very curious for a number of reasons. His dichotomy between engineering and statistical methods of estimating cost behavior is

overdrawn. If engineering methods are used when controlled experimentation is possible, then surely statistical methods are required in addition (and indeed are potentially most powerful) for the isolation of experimental error from systematic variation. It is true that statistical methods are also used when experimentation is impossible, but the validity of such results is frequently questionable. For example, in the cost study he cites, the degree to which cost varies with any output variable can be made to differ according to the choice of output dimension and the inclusion of other variables in the regression equation which are positively correlated with both cost and output.

The most curious aspect of his paper is the treatment of the size variable. Size is a proxy measure of capital in a cross-section study and I shall use the terms synonymously.

Meyer uses the capital variable in two ways: (1) He estimates a relation between capital and freight and passenger output dimensions, using the estimated coefficients to allocate depreciation expense. So far, so good. (2) He also estimates regression relations with various current expense categories as the dependent variable, using output dimensions and size as independent variables. The size variable is then eliminated by substitution of the relation "1" above. Thus size not only affects depreciation, but it also affects current operating expenses. In general, the size coefficients of the regression relations were positive indicating that for given output, firms of larger size had larger operating cost. Meyer also states that the estimated relations are long-run functions which describe how the industry will react in the long run to the disappearance of certain output dimensions.

This raises a number of questions about the economic interpretation of Meyer's results. It seems that the regression fallacy has also crept into Meyer's work.

We may ask the question: Why is a capital variable present in a long-run operating expense function? If the firm can choose the amount of capital it wishes to employ in the long run, then presumably it will choose that size which is consistent with the minimization of cost of some long-run rate of output. If a firm or group of firms needs more capital on the average than its fellows to produce the same rate of output, this would indicate either a lower price of capital or a different production function. If the firm requiring more capital also requires more current expense, then it is due either to a different production function or to an underestimate of the long-run output of the firm. Here is our old friend—the regression fallacy.

If the size of the firm is outside of its control, then a different production function is clearly implied when it needs more capital and more variable expense than its fellows to produce a given output; or else we have again underestimated long-run output.

My argument then is the following: Meyer found significantly positive partial regression coefficients for his size variables in the long-run expense functions. This means that firms with greater (less) expense than the simple expense-output regression predicted had greater (less) size than the simple size-output regression predicted. This is due to either a regression fallacy

which leads to the understatement (overstatement) of the long-run output of such firms or to differences in the production function. If it is the former, then Meyer cannot call his estimated functions long-run functions. If it is the latter, then size is a proxy variable for technological differences (snowfall, grades, etc.) and should not be eliminated by substitution of relation "1" above; nor should it be partitioned into freight and passenger components. In either case, the economic validity of the size coefficient in a long-run expense function is doubtful.

TRENDS IN CAPITAL INVESTMENT AND CAPACITY

CAPACITY UTILIZATION AND THE RATE OF PROFITABILITY IN MANUFACTURING

By William F. Butler
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As is well known, manufacturing companies are planning to cut their capital expenditures substantially in 1958. Thus, the recent preliminary McGraw-Hill survey showed that plans call for a 16 per cent reduction. The fact that these cutbacks are due in large measure to the appearance of excess capacity in virtually every manufacturing line is equally well known. The manufacturing companies surveyed by McGraw-Hill estimated that they were operating at 82 per cent of capacity in September, whereas they consider 90 per cent the preferred rate. The cutback in capital expenditures is also related to the widely held belief that excess capacity will lead to a squeeze on profits.

The ambitious purpose of this paper is to see what light can be shed on the current situation and the outlook for the next few years. More specifically, the question posed is this: Can we look for an upturn in expenditures for new plant and equipment by manufacturing companies within two years?

In attempting to answer this question, it is necessary to consider both the present state of the theory of economic growth and fluctuations and the present state of our statistical knowledge of trends in the relevant factors. I should warn you at the outset that, in view of our present lack of knowledge of these important matters, it is impossible to give a hard and fast answer to the question I have posed. Nevertheless, it may be useful to proceed with the exercise—for one test of theory, though not by any means the sole test, is its applicability to practical problems. The same test may also have pertinence when applied to the state of our statistical knowledge of capacity, output, and manufacturers' earnings on invested capital.

Theories of Growth and Fluctuation

Smithies' model (in *Econometrica,* January, 1957) provides the most recent formulation of theories of fluctuation and growth. To my mind Smithies has made a notable contribution. His article constitutes a superb synthesis of earlier work by such people as Harrod, Domar,

Hicks, Klein, Duesenberry, Modigliani, and of course Schumpeter and Keynes. In addition, Smithies' model provides a new approach to the analysis of problems of economic growth and fluctuations.

Smithies points out in his introduction that his model is not numerical; in other words, it cannot be filled in with statistical data. He expresses doubt that numerical models alone can ever be useful instruments of prediction in this field—an opinion with which I concur fully.

Nevertheless, a theoretical model is essential to reasonably accurate prediction, even though the prediction must rest on crude statistical techniques supplemented by judgment. The remainder of this paper represents an attempt to apply a general approach derived from Smithies' formulation of existing theory to the specific problem of what is likely to happen to manufacturing capital expenditures in the next two years.

In its simplest form, the problem of economic growth and stability revolves around maintaining a rate of investment that will equate the increased production resulting from the new investment to the increased incomes generated by it. If investment exceeds the "equilibrium rate," excess capacity will develop and vice versa. At the same time, there is implicit an "equilibrium rate of profits" on invested capital which should call forth an equilibrium rate of investment.

In this context, capacity represents the output that can be produced by the existing stock of capital operating under normal working conditions. Excess capacity should be measured, not in relation to actual output, but to the "Ratchet level," which is generally the highest level of output achieved in the recent past. The Ratchet concept is also important in evaluating the level of earnings at any given time.

Long-term Trends

Before attempting to look ahead at how these relationships may shape up in the future, it may prove instructive to look backwards at past trends. Unfortunately, we know far too little about past movements of the relevant magnitudes in this field. This is true despite the fine work that has been done by the Brookings Institution, Goldsmith, Creamer, and others of the National Bureau, Terborgh and Schiff of the Machinery and Allied Products Institute, and Wasson and Wooden of the Commerce Department.

Granting all the difficulties associated with lack of data, I would argue that what is known about past trends would support the following generalizations:

1. A certain amount of excess capacity seems to be a long-standing characteristic of the U.S. economy. Businessmen find it desirable to

have enough elbowroom to handle orders efficiently and promptly in periods of high-level demand. In this sense the U.S. economy may be different from other industrialized nations, for it would appear that businesses in the United Kingdom, Germany, and Japan press for a higher rate of capacity utilization than is the case in the U.S.

2. The evidence does not seem to support the widely-held view that the U.S. economy has a decided proclivity towards creating capacity

TABLE 1

MANUFACTURING CAPITAL STOCK, CAPACITY, AND OUTPUT

Year	Gross Capital Stock (Billions of 1956 Dollars) *Fortune*	Capacity		Output	
		Estimated by McGraw-Hill	Estimated by *Fortune*	Federal Reserve Board	4% per Annum Growth Trend
		(Index 1950=100)			
1950	178.9	100	100.0	100	100
1951	184.8	107	104.3	107	104
1952	189.5	114	109.0	111	108
1953	195.4	121	113.3	120	112
1954	200.0	126	117.2	112	117
1955	204.9	134	121.2	124	122
1956	212.5	142	127.0	127	127
1957	220.5	151	133.0	129	132

faster than demand. I would be the first to admit that we need more evidence on this score. Yet I believe that, in most of the significant downturns in economic activity during the past half century, other factors were far more important than superfluous capacity in bringing the boom to an end.

3. Once a downturn appears, the resulting state of general excess capacity represses investment demand, while a general shortage in boom times encourages it.

4. The Ratchet concept seems, as Smithies points out, to have an important bearing on business capital investment. Except in such unusual periods as the thirties, most business plans are based on the assumption that the long-term economic trend will be upward. Thus the highest level of output and earnings in the recent past is given considerable weight in decisions about future plans for expenditures on new plant and equipment.

5. Capital expenditures by manufacturing companies seem to be closely geared to the availability of internal funds with a lag of perhaps six to twelve months. This relationship is subject to the modifications suggested by the Ratchet concept.

Recent Capacity-Output Trends

How do trends in the past decade line up against this background? It is obvious, given the superior perceptiveness associated with hindsight, that we were short of capacity in almost every manufacturing industry right after World War II. Thus, we had a marked upsurge in investment in new manufacturing plants and equipment measured in current dollars. However, prices were rising—the Commerce deflator for these items went up 35 per cent from 1947 to 1955—and retirements were unusually high because of the fashion in which facilities had been overworked in wartime. Adjusting for these factors, the figures for the 1947-55 period line up this way for all manufacturing:

	Increase 1947-55
Output*	40%
Gross stock of plant and equipment in 1947 prices†	20
Net stock of plant and equipment in 1947 prices‡	27
Manufacturer's estimate of capacity§	50

* Federal Reserve Index.
† Table II.
‡ Department of Commerce.
§ Estimated from McGraw-Hill surveys.

That capacity increased more rapidly than capital stock is partly explained by the fact that expenditures for replacement also yield some increase in productive capacity (perhaps as much as 1 per cent per annum). Moreover, the heavy emphasis on equipment probably means that a dollar of investment buys more capacity now than in the twenties. Wooden and Wasson have estimated that equipment now accounts for more than two-thirds of expenditures as against less than one-half in the twenties. The implications of this shift need to be explored further. Is it possible that equipment has been so crammed into available floor space that we may face a substantial boom in industrial construction?

In addition, it is possible that our interpolation of materials from the early McGraw-Hill surveys may overstate the actual rise in capacity in the 1947-55 period. As in the early stages of any survey, it is difficult to interpret the results of early McGraw-Hill surveys which were necessarily based on smaller samples than were obtained in the latter part of the period. Thus some of the rise in the index of capacity may represent an improvement in reporting methods. This is, of course, no reflection on the early McGraw-Hill surveys, which represented a pioneering attempt to collect information in this most significant field.

In any case, it seems reasonably clear that companies in most manufacturing lines were short of capacity in 1947 and that they were still short in 1955. Industry-by-industry figures from the McGraw-Hill survey show that 1955 output was close to what was considered a desirable

TABLE 2

GROSS AND NET CAPITAL STOCK IN MANUFACTURING
(Billions of 1947 Dollars)

	Net Stock Commerce Department	Percentage Net to Gross Stock*	Gross Stock
1928	$43.2	52.1	$82.9
1929	45.5	52.5	86.7
1930	46.0	51.9	88.6
1931	45.2	50.8	89.0
1932	43.3	49.3	87.8
1933	42.1	47.8	88.1
1934	41.0	46.8	87.6
1935	40.1	46.2	86.8
1936	40.0	45.4	88.1
1937	40.8	46.1	88.5
1938	40.2	45.5	88.4
1939	39.9	45.1	88.5
1940	40.6	45.2	89.8
1941	42.4	45.6	93.0
1942	42.2	44.8	94.2
1943	41.5	43.8	94.7
1944	41.3	43.2	95.6
1945	42.9	43.4	98.8
1946	46.9	45.0	104.2
1947	50.5	46.5	108.6
1948	53.1	47.7	111.3
1949	54.2	48.1	112.7
1950	55.5	48.6	114.2
1951	57.7	49.0	117.8
1952	59.7	49.3	121.1
1953	61.7	49.6	124.4
1954	62.8	49.3	127.4
1955	64.3	49.3	130.4
1956	69.3	49.3	130.6
1957	74.6	49.3	151.3

* Per cent net to gross calculated from Machinery and Allied Products Institute estimates for total business.

rate in all but a few industries. Federal Reserve figures on capacity and output of major materials also show that output was well above 90 per cent of capacity in late 1955.

Expansion Boom. In face of this shortage of capacity, good business in 1955, and a general expectation of continued growth and prosperity, businessmen generally set out to expand capacity to restore a comfortable margin of excess capacity and to keep pace with the growth of the economy. In current dollars, manufacturing expenditures for fixed capital rose 40 per cent between 1955 and 1957—a most dramatic gain. Prices were forced up in the process; so the real increase in capacity was not as great as the uncorrected figures would indicate. Nevertheless, it was greater than the increase in output, as the following estimates for all manufacturing show:

	Increase 1955-57
Federal Reserve Index of Output	4.0%
Gross capital stock, 1956 dollars, as estimated by *Fortune*	7.6
Capacity: *Fortune* estimates	9.7
McGraw-Hill surveys	12.7

The fact that *Fortune* and McGraw-Hill come up with significantly different estimates of the increase in capacity in this period illustrates the great difficulty of measuring changes in capacity. The *Fortune* estimates are based on the general statistical techniques used by the Commerce Department and the Machinery and Allied Products Institute. The McGraw-Hill figure represents estimates by the companies surveyed of changes in their capacity. Of necessity, the McGraw-Hill survey covers the larger concerns. Experience shows that the smaller companies generally do not respond to questionnaires, for a variety of reasons. There is some evidence that suggests that small manufacturing companies may not have matched the pace of expansion set by larger companies in the 1955-57 period.

However, both approaches are subject to an uncomfortably wide margin of error. "Capacity" is, of course, a concept that is almost impossible to define in terms that are meaningful to individual industries or businesses. At the same time, estimates based on statistical techniques must rely on assumptions that may not prove realistic.

What is really needed is a new set of statistical measurements based on detailed studies of individual industries. Such studies could deal with the problems of evaluating the role of stand-by capacity, the increase in capacity resulting from replacement, trends in the capital-output ratio, and technical developments that affect both capacity and productivity. Creamer's studies underline the importance of looking at trends in individual industries.

Lacking such data, what can be said about prospects for manufacturing capital expenditures in the period immediately ahead? It is clear from the over-all figures as well as from such statistics as are available on individual industries that excess capacity is a nearly universal phenomenon today.

However, today's excess capacity is due in large measure to the fact that the economy has been going through a series of adjustments that have held down demand for manufactured products. If production had risen 4 per cent per year in 1956 and 1957, there would be little excess capacity today, using either McGraw-Hill or *Fortune* measurements. Moreover, the cutback in capital expenditures now under way points to an annual increase of no more than about 2 per cent in manufacturing capacity during 1958 and 1959.

In other words, it does not appear that we are overburdened with manufacturing capacity, if one can assume that the over-all economy

will continue to move ahead along a growth trend yielding an average annual increase of 3½-4 per cent in gross national product. Thus *Fortune's* estimate of capacity shows that the 1957 figure is in line with a 4 per cent growth trend since 1950. And the McGraw-Hill figures also lead to the same conclusion: under a long-term growth trend of 4 per cent per year, the 1957 capacity figure is 14 per cent above the trend, yielding a theoretical operating rate of 87 per cent. It should be emphasized again that the *Fortune* and McGraw-Hill measurements are based on different concepts of capacity. The *Fortune* method, for example, tends to write off high-cost, obsolete facilities which might be included in the capacity estimates submitted to McGraw-Hill. My interpretation would be that both estimates support the general conclusion that capacity should be in balance with the long-term trend in output by mid-1959.

This is, of course, a vast oversimplification. A host of factors play upon decisions to invest in new plant and equipment. Yet the above arithmetic does suggest that the fear of an overbearing amount of excess capacity need not be a dominant factor in making investment decisions for 1959 and 1960. If one can assume that the Ratchet principle will operate as it seems to have in the past (except during the thirties), the capacity-output relationship for manufacturing generally—and for most individual lines—could favor a renewed emphasis on expansion in late 1959 or 1960.

Earnings Trends. This brings us to the question of trends in profitability. In approaching this subject, I cannot resist the compulsion to make a few side remarks. Our published statistics go to great lengths to adjust such series as net farm income, average hourly earnings and disposable income to eliminate the effects of changes in prices; yet corporate earnings data are usually presented in raw form—a procedure that can be highly misleading.

These uncorrected earnings figures are usually related to sales or to net worth, which is also uncorrected for the effects of price changes. As a result of these shortcomings in statistical measurements, much of the contemporary comment on earnings bears little relation to reality. There is, for example, no rule that the ratio of earnings to sales must hold at a high level to ensure prosperity and growth.

What is wanted is reasonably accurate and up-to-date statistics relating earnings to the value of the assets employed in a manner that eliminates the effects of price changes. Notable efforts in this direction have been made by the Machinery and Allied Products Institute, the Department of Commerce, and the National Bureau of Economic Research. Yet we still lack the sort of statistics we need to relate current trends in earnings to the sweep of longer term trends.

In the absence of authoritative data, we have attempted to piece together estimates adjusted for price changes of the return after taxes on the assets employed in manufacturing industries. These estimates, while necessarily crude, suggest a remarkable long-term stability in the rate of return after taxes per dollar of capital assets in use. There are, of course, marked ups and downs associated with business cycles. Yet the average rate of return in periods of high-level economic activity seems to show no tendency to decline.

Studies made by the Machinery and Allied Products Institute point to the same conclusion. They show that corrected profits after taxes averaged 8 per cent of corrected net worth in the years 1925-29 and 7½ per cent in the years 1946-55. If the 1946-55 figures are corrected for the excess profits tax which was in effect from 1950 through 1953, the average return would be 8 per cent. The figure for 1955 is slightly under 8 per cent.

Capital-Output Ratios. One important reason for the stability in the rate of return in face of the huge increase in corporate income taxes has been the decline in the capital-output ratio as shown in Creamer's National Bureau paper. Creamer's estimates in 1929 prices show a decline in the ratio of fixed capital to output from .443 in 1929 to .338 in 1956, or about one-fourth. As Bodenhorn has suggested, it is possible that the rise in the corporate income tax rates may have had something to do with this, in that investments that do not promise to yield a satisfactory post-tax return are ruled out. But this is too large a subject to be explored here.

In any case the immediate prospect would seem to be for a decline in earnings. Capacity has been increased about 10 per cent in two years while production has grown only 4 per cent. The Quarterly Financial Reports prepared by the Federal Trade and Securities and Exchange Commissions show that the uncorrected rate of return on net worth in current dollars has already turned down.

In reviewing the industry-by-industry figures since 1947, it is interesting to note that in most industries the rate of return is well maintained so long as the operating rate as shown by the McGraw-Hill survey stays above 85 per cent. When operations drop below 85 per cent of capacity, the rate of return on net worth tends to decline. If, then, manufacturing output declines moderately in 1958 in line with the projections made by many forecasters, earnings will show further decreases.

However, three factors may operate to blunt the impact of declining earnings on expenditures for new plant and equipment:

1. The Ratchet effect with respect to both earnings and capacity may induce businessmen to look primarily to long-term trends rather than

to the short-run situation in setting capital budgets. If the decline in earnings is relatively moderate as it was in 1949, the Ratchet effect could operate in much the same manner as it did then.

2. A second point is that in recent years plant and equipment expenditures have been more closely related to cash flow (earnings after taxes plus depreciation) than to earnings alone, as Table 3 shows. Cash

TABLE 3

CAPITAL EXPENDITURES OF ALL MANUFACTURING ESTABLISHMENTS, EARNINGS AND CASH FLOW OF MANUFACTURING CORPORATIONS
(Billions of Current Dollars)

	Capital Expenditures*	Earnings after Taxes†	Amortization†	Depreciation†	Total Cash Flow
1948.....	9.1	11.5		3.3‡	14.8
1949.....	7.1	9.0		3.6	12.6
1950.....	7.5	12.9		3.9	16.8
1951.....	10.9	11.4		4.4	15.8
1951§.....	10.9	11.9		4.9	16.8
1952.....	11.6	10.7	0.4	5.1	16.2
1953.....	11.9	11.3	0.8	5.5	17.6
1954.....	11.0	11.2	0.9	5.9	18.0
1955.....	11.4	15.1	1.0	6.6	22.7
1956.....	15.0	16.2	0.9	7.7	24.8

* SEC—Commerce Surveys.
† SEC—FTC Surveys
‡ Partly estimated.
§ New SEC-FTC Series.

flow will hold up better than earnings if output should continue to decline moderately.

3. Incentives to invest in new facilities designed primarily to cut costs are as strong as ever. McGraw-Hill surveys show that such expenditures have varied from a low of 35 per cent of total fixed investment in 1949 to a high of 53 per cent in 1951. Kendrick's studies point to a positive correlation between increases in capital used per man-hour and output per man-hour. In part because of the drive to expand capacity in the past two years, opportunities to deepen investment in ways that should lead to increased productivity may not have been fully taken up.

Summary. As the warning flag hoisted at the outset indicated, this analysis does not add up to the sharp conclusion that expenditures for new plant and equipment by manufacturers will move ahead again at some specified date in the future. At most, the over-all conclusion, after attempting to look at current prospects against the perspective furnished by past trends, can be summed up in three propositions:

1. If the rate of additions to capacity is cut back sharply in 1958 and

1959, capacity can be brought back in balance with the long-term rate of growth in output in a relatively short time.

2. Other things being equal, a long-term view of earnings prospects would justify some increase in the rate of expansion by late 1959 or early 1960.

3. In the interim, continuing needs for replacement and modernization plus a well-maintained cash flow from depreciation and earnings should place a high floor under the decline in expenditures for new plant and equipment.

In the uncertain and perilous world in which we reside, other things are never equal. So these propositions do not add up to a forecast of what will happen. Yet I think they may provide some reassurance in the sense that the adjustments in capacity and output and in earnings and investment required to keep our economy growing do not appear to be beyond the pale of possibility for the period immediately ahead.

Moreover, this exercise may be useful in illustrating the problems of fitting an analysis of trends in the near-term future into the framework provided by received theory. A major part of the difficulty lies in a deplorable lack of current statistics on these important matters. Yet the exercise does appear to show that the framework of theory is useful, as Smithies suggests, in supplementing judgment by sharpening and improving knowledge of what can happen under specified conditions. In that sense it may be worth while, even if the tentative conclusions, highly salted by the element of judgment, prove to be wide of the mark.

POSTWAR TRENDS IN THE RELATION OF CAPITAL TO OUTPUT IN MANUFACTURES*

By Daniel Creamer
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Recent developments in our national economy have again focused attention on business cycle problems: what brought the expansion phase to a halt and what adjustments seem indicated before the upturn occurs? These, of course, are important and interesting problems. But even in these circumstances consideration of the longer term developments is relevant if a proper perspective on current movements is to be achieved. Our objective is to measure and analyze short-run movements for the light they might shed on changes over the longer term.

Changes that concern us in this paper are the changes in the relationship of capital to output in manufactures and, more particularly, the changes in this relationship since World War II. We may concentrate on this recent period since elsewhere we have presented our measures of the changes in the capital-output ratios for selected bench-mark years from 1880 to 1948.[1] It is these changes that form the point of departure for the more recent developments.

Trends in Capital-Output Ratios, 1880-1948

Despite the limitations of the statistical data, a clear pattern of movement is discernible. But first a few background considerations concerning the estimates. For the most part, the bench-mark years are years of peak or near peak level of business activity, when manufacturing industries in general may be presumed to have operated at or near full capacity. The stock of capital in a given year (numerator of the ratio) and output (the denominator) are both expressed in 1929 prices in order to eliminate the effect on the ratio of the lag with which price changes are incorporated in the stock of capital. As with most price indexes, the price deflators developed for this analysis do not

* The estimates for 1956 had been prepared for a forthcoming report of the National Industrial Conference Board which graciously consented to their prior use in this paper. I am also indebted to Mr. Zoran Hodjera and Miss Anita Kleinman for the carrying out of an extended series of tedious and complicated transcriptions and computations underlying those estimates, and to Miss Miriam Civic whose careful review of the estimates and text saved me from committing numerous errors.

[1] See Daniel Creamer, "Trends in Capital and Output in Manufacturing, 1880-1948" (*Occasional Paper 41*, NBER, 1954). In a forthcoming NBER monograph—*Trends in Capital Formation and Financing in Manufactures and Mining*, by Creamer, Dobrovolsky, and Borenstein—the methodology of the estimates is described in detail. Unless it is stated otherwise, these are the sources for the statements made in this paper.

allow for changes of quality, but in this instance it is a virtue. The stock of capital is the sum of fixed capital, comprised of structures and equipment net of depreciation, and working capital, defined as all other assets except investment in securities. Output is defined as gross operating receipts.

What is the pattern traced by estimates of this character? In 1880 $1,000 of output (in 1929 prices) entailed the existence of $547 of capital (fixed and working capital combined in 1929 prices); that is, the capital-output ratio stood at .547. Over the next four decades, to

TABLE 1

TOTAL STOCK OF CAPITAL* AND CAPITAL-OUTPUT RATIOS (IN 1929 PRICES) IN MANUFACTURES, SELECTED BENCH-MARK YEARS, 1880–1956

Year	Total Capital in 1929 Prices (In Millions of Dollars)	Average (Geometric) Annual Per Cent Change Between Bench-mark Years	Capital-Output Ratio in 1929 Prices
1880	4,821		.547
1890	11,157	+8.8	.730
1900†	18,626	+5.3	.803
1900‡	17,452		.794
1909	31,563	+8.2	.967
1919	46,094	+4.5	1.022
1929	63,022	+3.2	.885
1937	55,319	−1.6	.741
1948	77,982**		.609
	78,357††	+3.2	.609
1953	102,038	+5.4	.631
1956§	114,798	+4.0	.664

* Sum of working capital and fixed capital net of depreciation.
† Comparable with preceding years.
‡ Comparable with following years.
§ Preliminary.
** Comparable with preceding years by excluding shipbuilding.
†† Comparable with following year by including shipbuilding.
SOURCE: 1880–1948: D. Creamer, "Capital and Output Trends in Manufacturing Industries, 1880–1948" (*Occasional Paper 41*, NBER, 1954). 1953 and 1956: NICB worksheets.

judge by readings at the end of each decade, ever increasing amounts of real capital were installed to produce $100 of real output. In 1899, for example, the capital-output ratio was .794, in 1909, .967, and in 1919, 1.022. Thus, between 1880 and the end of World War I, the amount of capital to produce a given unit of output increased by 87 per cent. Analysis elsewhere discloses that only 17 per cent of the rise in the capital-output ratio is attributable to the shift in industry composition between 1880 and 1919. Another way of showing the genuineness of the movement is to point out that without exception each of the thirty-nine subgroups of manufactures that can be distinguished over this period had rising capital-output ratios. The only variation was that some industry subgroups attained a peak in bench-mark years other

than 1919. One must conclude from this evidence that technological innovations, broadly defined, were on balance predominantly labor-saving rather than capital-saving during these four decades.

But in the period between the end of World War I and 1948, the capital-saving features of technological innovations came to the fore. At least this is a possible interpretation of the clearly discernible downward trend in the capital-output ratios in three cyclical peak years following 1919; viz., in 1929, 1937, and 1948. In each of these bench-mark years, the capital-output ratio for all manufactures was lower than the ratio for the immediately preceding bench-mark year and by a substantial amount. In 1937, for example, $741 of capital was associated with each $1,000 of output compared with $1,022 in 1919 and $967 in 1909. By 1948, $1,000 of output was turned out by $609 of capital. Again, the downward movement in the capital-output ratio was found in all thirty-nine subdivisions. Moreover, the shifts in industry composition over these decades were such as to bring about a continued rise in the ratios; that is, the downward trend occurred despite industry shifts.

When fixed and working capital are each related to output, patterns of the movement of each ratio are similar to that of total capital-output ratio. That is, both types of capital were used in increasing amounts for a unit of output up to the decade dominated by World War I. From that decade to 1948, decreasing amounts were used, and the relative amplitudes of change were similar. (It is comforting to note that estimates of net fixed capital prepared by Messrs. Wooden and Wasson for the Department of Commerce, in *SCB,* November, 1956, and based on cumulative expenditures for structures and equipment yield fixed capital-output ratios in constant prices for 1929, 1937, and 1948 that are similar in direction and amplitude to those based on balance-sheet data—the ones used in this paper.)

These movements in the relationship of capital, particularly of fixed capital, to peak output, both in constant prices, raise the question whether rising capital-output ratios in specific industries can be equated with a condition of excess capacity and declining ratios with overutilization of capacity. A rising ratio is simply a measure of the fact that more capital per unit of output is found in one period than in an earlier period. This may result from the use of different methods of production in which capital replaces other inputs or to the creation of capacity in excess of current peak demands, or to both. Conceptually, at least, a rising capital-output ratio and overutilization of capacity can coexist. Data other than the change in the capital-output ratio are required to assess the relative importance of these two factors and the degree of capacity used.

Correspondingly, a declining capital-output ratio merely specifies that less capital per unit of output is found in one period than in an earlier period. This may be traceable to capital-saving innovations or to overutilization of capacity, or both. Moreover, a declining ratio is compatible with capacity in excess of peak demands. Once again, evidence other than changes in these ratios is required in order to answer such questions. In short, our materials, restricted as they are to the capital-output ratios, can make only an ambiguous contribution to the discussion of excess capacity.

Capital-Output Ratios after World War II

Before we examine the relation of capital to output in the post-World War II period, it is instructive to compare the rate of growth in capital assets and the movement of the capital-output ratio. Between 1880 and 1948, there are seven periods bounded by our bench-mark estimates. In the first four, characterized by a rising ratio of capital to output, the average (geometric) annual rate of expansion of manufacturing capital was never less than 4.5 per cent, and in two decades, averaged 8 per cent or more. By contrast, in the last three periods, characterized by declining ratios of capital to output, the average annual rate of growth did not exceed 3.2 per cent, and in one of these periods, 1929 to 1937, there was a contraction in the stock of manufacturing capital. This comparison suggests that relatively high rates of growth in capital stock are associated with rising capital-output ratios, and, conversely, relatively low rates of growth are associated with declining ratios of capital to output.

The clue, then, to postwar developments in the relation of capital to output is the annual rate of expansion of the stock of manufacturing capital. Between 1948 and 1953, capital in 1929 prices increased at an average annual rate of 5.6 per cent and between 1953 and 1956 at 4.0 per cent. These rates are above those that prevailed between the end of World War I and 1948. On this showing, one would expect a rise in the capital-output ratio which would represent another reversal of direction in the long-term trend. And this is precisely what the estimates reveal after the net fixed capital estimates have been adjusted for accelerated amortization of emergency facilities and for the shift away, beginning in 1954, from straight-line depreciation to methods yielding faster write-offs. The total capital-output ratio in 1953 was 3.6 per cent above the 1948 ratio and the 1956 ratio exceeded that for 1953 by 5 per cent. This seems sufficient to establish a reversal in direction. That the change had not proceeded far by the end of 1956 is indicated by the levels of the 1956 ratio and of those for 1937 and 1929. The 1937 ratio, for example, exceeded the 1956 ratio by 12 per cent, and

the 1929 ratio was 33 per cent higher. At a later point we shall speculate briefly whether the postwar trend of increasing amounts of capital per unit of output will be sustained.

Let us take a closer look at the postwar changes in capital and output by examining the ratios by major industry groups and by type of capi-

TABLE 2

STOCK OF FIXED CAPITAL AND RATIOS TO OUTPUT OF TOTAL CAPITAL AND FIXED CAPITAL (ALL IN 1929 PRICES) BY MAJOR MANUFACTURING GROUPS, 1948, 1953, AND 1956*

MAJOR INDUSTRIES	FIXED CAPITAL			RATIO TO OUTPUT					
				Total Capital			Fixed Capital†		
	1948	1953	1956	1948	1953	1956	1948	1953	1956
	(In Millions of Dollars)								
Total manufactures	36,685	48,256	54,140‡	.609	.631	.659	.285	.298	.313
Beverages	968	959	n.a.	.571	.859	n.a.	.268	.256	n.a.
Food and kindred products	3,259	3,148	4,078§	.347	.354§	.417§	.164	.145§	.151§
Tobacco manufactures	149	115	130	.569	.668	.700	.056	.040	.046
Textile mill products	2,088	2,178	2,091	.555	.611	.654	.237	.250	.240
Apparel	302	338	**	.338	.414	**	.051	.053	**
Forest products	1,638	1,626	1,649	.705	.694		.394	.349	.354
Lumber and its products		(1,257)	1,292		.723	.611		.413	.407
Furniture and fixtures		(369)	357		.638	.776		.228	.212
Paper and allied products	1,526	2,002	2,412	.764	.751	.756	.471	.477	.477
Printing and publishing	1,135	1,194	1,376	.690	.599	.609	.305	.273	.280
Chemicals and allied products	3,309	6,865	7,493	.716	.845	.815	.365	.531	.482
Petroleum and coal products	7,217	7,927	9,287	.893	.795	.861	.576	.506	.547
Rubber products	480	486	568	.518	.486	.530	.175	.141	.159
Leather and leather products	186	152	152	.407	.412	.482	.093	.076	.073
Stone, clay and glass products	1,158	1,456	1,740	.738	.744	.741	.401	.398	.401
Primary and fabricated metals	6,363	10,004	††	.695	.745	††	.363	.457	††
Primary metals		(6,676)	6,665		.849	.856		.565	.540
Fabricated metals, ordnance, and miscellaneous		(3,937)	4,035		.502	.634		.288	.293
Machinery, excluding electrical	2,429	2,904	3,251	.712	.632	.670	.250	.222	.232
Electrical machinery	1,095	1,585	**	.583	.498	**	.186	.140	**
Transportation equipment, excluding motor vehicles	791	1,770	1,970	.967	.798	.872	.382	.330	.327
Motor vehicles and equipment	1,705	2,456	**	.493	.539	**	.209	.241	**
Miscellaneous	887	1,091	‡‡	.609	.665	‡‡	.223	.200	‡‡
Instruments		(482)	522		.812	.773		.252	.255
Other		(4,379)	5,844		.494	.553		.157	.202

* Preliminary.
† Defined as sum of structures and equipment net of depreciation.
‡ Total exceeds sum of the industry groups owing to the adjustment of the total but not the subgroups for the shift away from straight-line depreciation.
§ Includes beverages in 1956. The comparable total capital-output ratio in 1953 is .429 and fixed capital-output ratio, .161.
** Included in "other" grouping comprised of apparel, electrical machinery, and motor vehicles and equipment.
†† Grouping comparable with earlier years is not possible.
‡‡ Included with "fabricated metal products."
SOURCE: 1948: *Op. cit., Occasional Paper 41.* 1953 and 1956: NICB worksheets. For general statement of sources and method see text.

tal. But first a word about the extension of the capital estimates beyond 1953. The estimates for the bench-mark years 1929 through 1953 are based on corporate balance-sheet data reported to the Internal Revenue Service. As similar tabulations are not yet available for 1955 and 1956, it was necessary to rely on sample indicators of comparative change in the relevant asset items. The *Quarterly Financial Report, United States Manufacturing Corporations,* compiled by the Federal Trade Commission and Securities and Exchange Commission, provided the requisite indicators for extending the 1953 estimates. Comparison

of the relative movements in fixed and working capital in the *Quarterly Financial Reports* with those in *Statistics of Income* for several years prior to 1955, indicates that there is close agreement in relative changes for all manufacturing and for seventeen major industry groups. Acceptable adjustments to reported values for net fixed capital are made for accelerated amortization by major industry groups, but only a cruder adjustment for the shift away from straight-line depreciation after 1953 could be devised and then only for total manufactures. The net fixed capital in manufactures owned by government but operated by private industry is included in the net fixed capital estimates by major industries for 1953 and 1956 by entering as a constant the figures published by the Bureau of the Budget as of 1955. The 1956 output in 1929 prices by major industries is derived by extrapolating our estimates of 1953 output in 1929 prices by the relative changes in the Federal Reserve Board indexes of manufacturing output.

In terms of the bench-mark estimates, the postwar period is divided into two parts: 1948-53 and 1953-56. The capital-output ratios for 1948 were probably depressed by the overutilization of capacity brought about by unusually strong consumer demand coincident with inability to expand productive facilities at the rate desired by entrepreneurs. This should be remembered in the examination of the changes of the capital-output ratios between 1948 and 1953 by industry groups.

First a brief glance at the relationship of working capital to output in the postwar period—perhaps the least interesting of the two components of total capital. This ratio in 1953 was 3 per cent higher than the 1948 ratio. Thus the downward trend in the working capital-output ratio, evident since 1919, had come to a halt in 1953, at least for all manufactures. But for eight of the nineteen subgroups, the downward trend persisted through 1953, and in the subgroups with a rising ratio, the evidence suggests that the rise was mainly attributable to the requirement for a larger volume of accounts and notes receivable per unit of output.

In the following three-year period, the ratio of working capital to output in 1956 was 5 per cent above the ratio for 1953 and 8 per cent above the 1948 ratio. The reversal in the direction of the trend not only continued but it also became more pervasive, having occurred in fourteen of the eighteen subgroups. Once again, to judge by a limited examination of the evidence, the need to hold an ever larger volume of accounts and notes receivable per unit of output has been responsible for the rising ratio of working capital to output. This evidence suggests that as the sellers' market gave way to a buyers' market, producers have been obliged to finance an increasing proportion of their sales. This sort of pressure is likely to persist as long as the expansion

of fixed capital, and hence of capacity, proceeds at relatively high rates.

Fixed capital in all manufactures expanded by 32 per cent between 1948 and 1953, and the ratio of fixed capital to output increased from .285 to .298, a gain of 5 per cent. When we examine the changes by manufacturing subgroups—and the statistics permit us to distinguish nineteen subgroups in this period—we find that the magnitude of the changes for all manufactures is far from typical. Indeed, the ratio of fixed capital to output actually declined in thirteen of the subgroups that accounted for one-half of all fixed capital in manufactures in 1953. The declines, moreover, in this ratio, were more than nominal: only in four subgroups was the decline 10 per cent or less. Five of the subgroups with declining ratios were industries in which fixed capital in 1929 prices contracted between 1948 and 1953 (food and kindred products, beverages, tobacco products, forest products, and leather and leather products—old established industries in which innovations in product and technology have probably been minimal). The other eight, with two exceptions (electrical machinery and transportation equipment except motor vehicles), were industries in which fixed capital expansion was less rapid than for all manufactures. Thus, a majority of major manufactures' subgroups owning half of net fixed capital assets in 1953 continued trends that emerged around World War I—modest rates of growth (except for transportation equipment and electrical machinery) and technological innovations that on balance were ever more capital-saving.

The remaining six industry subgroups, also owning half of all fixed capital, were characterized by an increase in the ratio of fixed capital to output. In three industries—chemicals and allied products, primary metals and fabricated metal products, and motor vehicles and equipment—the rise in the ratio was substantial; in two—textile mill products and apparel—the rise was moderate; and in paper and allied products the rise was nominal. Indeed, the rise in the ratio for textile mill products would also be nominal if the peak output of 1950 were substituted for the less-than-peak output of 1953. If allowance could be made for the depressing effect on this measure of the special circumstances prevailing in 1948, the three ratios showing a moderate or nominal rise would probably appear as showing no change from 1948. In other words, the reversal in the long-term downward movement of the fixed capital-output ratio was restricted to chemicals and allied products, primary metals and fabricated metal products, and motor vehicles. These are branches in which product and technology innovations in these years were striking, resulting in a rapid expansion of fixed assets—more than a doubling in chemicals and allied products and an increase of about one-half in primary metals and fabricated

TABLE 3

PER CENT CHANGE IN FIXED CAPITAL-OUTPUT RATIOS AND AVERAGE (ARITHMETIC) ANNUAL PER CENT CHANGE IN FIXED CAPITAL, 1948 TO 1953 AND 1953 TO 1956, BY MAJOR GROUPS OF MANUFACTURES

	Per Cent Change in Fixed Capital-Output Ratio 1948–53	Annual Per Cent Change in Fixed Capital 1948–53	Per Cent Change in Fixed Capital-Output Ratio 1953–56	Average Annual Change in Fixed Capital 1953–56
All manufactures	+ 5	+ 6.3 (5.6)†	+ 5	+ 4.1 (3.9)†
Tobacco products	−29	− 4.6	+15	+ 4.3
Electrical machinery	−25	+ 8.9	*	*
Rubber products	−19	+ 0.2	+13	+ 5.6
Leather and its products	−18	− 3.7	− 4	0
Transportation equipment excluding motors	−14	+24.8	− 1	+ 3.8
Petroleum and coal products	−12	+ 2.0	+ 8	+ 5.7
Food and kindred products	−12	− 0.7	− 6‡	− 0.2‡
Forest products	−11	− 0.1	(− 3)	(+ 0.5)
Lumber and products	n.a.		− 2	+ 0.9
Furniture and fixtures	n.a.		− 7	− 1.1
Machinery excluding electrical	−11	+ 3.9	+ 4	+ 4.0
Printing and publishing	−10	+ 1.0	+ 3	+ 5.1
Miscellaneous	−10	+ 4.6	n.a.	n.a.
Beverages	− 4	− 0.2	§	§
Stone, clay, and glass products	− 1	+ 5.1	+ 1	+ 6.5
Paper and allied products	+ 1	+ 6.2	0	+ 6.8
Apparel and products	+ 4	+ 2.4	*	*
Textile mill products	+ 6	+ 0.9	− 4	− 1.3
Motor vehicles and equipment	+15	+ 8.8	*	*
Primary and fabricated metal products	+26	+11.4	**	**
Primary metals	n.a.		− 4	− 0.1
Fabricated metals including miscellaneous	n.a.		+ 2	+ 0.8
Chemicals and allied products	+46	+21.5	− 9	+ 3.0
Instruments	n.a.	n.a.	+ 1	+ 2.8
All others*	(+ 1)	(+ 8.2)	+29	+11.2

NOTE: All percentages are based on magnitudes expressed in 1929 prices; fixed capital is defined as sum of structures and equipment net of depreciation.

* Includes apparel, electrical machinery and motor vehicles and parts. Data for individual subgroups are not shown owing to their unreliability in 1956.

† Geometric average.

‡ Includes beverages.

§ Included in food and kindred products.

** Grouping comparable with preceding period is not possible.

SOURCE: Based on Table 2.

metal products and motor vehicles and equipment. That is, when dramatic innovations in technology promising substantial cost reduction are available, competitive pressure may force management to invest in the plant and equipment incorporating the new technology, thereby extending capacity regardless of whether the additional capacity is immediately required for the satisfaction of current demand. This, of course, would result in a rising fixed capital-output ratio for the industries in which this occurs. Whatever the reason, the data establish

that for the first time in three decades an important segment of manufactures had more fixed capital per unit than in the preceding period of peak activity. Was this reversal of trend broadened and extended by 1956?

Before we examine the evidence, let me repeat two cautions about the estimates. The fixed-capital estimates for 1956 are extensions of the 1953 estimates based on the indications of a sample. The 1956 estimate, therefore, is probably less firmly based than are the estimates for 1948 and 1953 and had best be considered as a preliminary one.

The other caution relates to the change in the depreciation regulations for acquisitions of depreciable assets after 1953. They introduce an element of incomparability to balance-sheet data since the new regulations permit a faster recovery of new investment than was possible under straight-line depreciation previously prescribed. Thus estimates of net fixed capital derived from book values would be relatively more net of depreciation after 1953 than in 1953 and in earlier years. The elimination of this element of incomparability raised the 1956 estimate of net fixed assets for all manufactures in 1929 prices by 1.6 per cent and, therefore, the fixed capital-output ratio by the same amount. This adjustment could not be made by industry subgroups. Departure from the average adjustment of all subgroups would depend on the rate of expansion of fixed capital assets since 1953 and how much of this was subject to accelerated amortization as an emergency facility. We fall back on an arbitrary arrangement by treating a decline in the fixed capital-output ratio of 2 per cent or less between 1953 and 1956 as equivalent to no change.

Once again, the most helpful clue to the changes in the relation of fixed capital to output is the change in the annual rate of growth. We have already noted that in the earlier quinquennium the industry subgroups with the relatively higher rates of growth in the main had rising ratios of fixed capital to output and those with relatively low rates of growth were characterized by declining ratios.

We turn now to the changes shown for each of these two classes of industry subgroups in the 1953-56 period, starting with the subgroups that had a rising ratio of fixed capital to output in 1948-53. In all subgroups, except "all others," the average annual rate of expansion of fixed capital was either less than or only slightly in excess of the annual average rate in the preceding five-year period. Indeed, in two subgroups, there was slightly less fixed capital in 1956 than in 1953 and in three of the remaining four, the rate of increase was 3 per cent or less per year. In other words, the rapidly expanding subgroups in the first part of the postwar period had lost their growth momentum by 1956. Whereas all these subgroups had rising fixed capital-output ratios

between 1948 and 1953, the ratios either were unchanged or declined between 1953 and 1956, when their growth rates tapered off. The single exception was the "all other" group, dominated by motor vehicles and parts—a group for which the statistics are least reliable. In this exceptional case, the average annual expansion rate was high in both periods, 8 and 11 per cent respectively, and the fixed capital-output ratio in 1956 exceeded the 1953 ratio by 29 per cent.

Now for a look at the thirteen (now eleven) subgroups with relatively low rates of growth between 1948 and 1953 and declining ratios of fixed capital to output. In all subgroups except transportation equipment excluding motor vehicles, fixed capital, to judge by annual averages, expanded more rapidly or contracted less rapidly between 1953-56 than between 1948 and 1953. The subgroups with an expansion rate of 4 per cent or higher had a higher fixed capital-output ratio in 1956 than in 1953. There were six such subgroups while in the remaining five subgroups the ratio in 1956 was unchanged or lower than the 1953 ratio.

If our attention is focused on the seventeen subgroups comprising all manufactures except the all other group, we find that eight subgroups, owning almost two-fifths of all fixed capital in manufactures, had rising fixed capital-output ratios between 1953 and 1956, but probably in only one of these subgroups (fabricated metal products) did the ratio also rise between 1948 and 1953. Of the remaining subgroups, six had declining ratios, and in three subgroups the ratios were unchanged (i.e., the decline did not exceed 2 per cent). Once again, the change in aggregate manufactures did not typify the direction of change among the majority of the broad component groups comprising the total. Moreover, the modest rise in the fixed capital-output ratio in the postwar period is traceable to one set of industry subgroups in the first five years and to another set in the following three years.

To summarize, the postwar movements in the relation of fixed capital to output seem to fall into the pattern of long-term change in this ratio. In the past, when the rate of annual growth was about 4 per cent or higher, the ratio of fixed capital to output has risen, and this has been true with few exceptions since 1948 whether we look at all manufactures or the major subgroups. How much of the rise is traceable to the integration of new technologies and products that are capital intensive and how much to the creation of capacity in advance of current demand, which may or may not be deliberate, cannot be determined from these data. When the expansion rate is more modest, that is, less than about 4 per cent, technological innovations seem to be largely restricted to improvements and refinement of established technologies that on balance

are capital-saving, hence result in a declining fixed capital-output ratio.

On the basis of this evidence from the near and more remote past, I would venture the guess that the continued adoption of automated processes might well call for an expansion rate that would result in a stable or slowly rising fixed capital-output ratio over the next decade. If at that time there are no major technological innovations or new industries on the horizon, the expansion rate will be more modest and innovations predominantly will be restricted to capital-saving refinements. In those circumstances, the ratio will again reverse direction and move slowly downward.

DISCUSSION

ERIC SCHIFF: The two interesting papers presented by Mr. Creamer and Mr. Butler are both concerned, although from partially different angles, with the significance of two important findings about the development of the capital coefficient (capital-output ratio) in manufacturing: its decline—trendwise, with a self-explanatory interruption during the Great Depression—between the post-World War I and the post-World War II periods, and its partial rebound during the last decade.

Regarding statistical methodology, I would like to add only a few supplementary observations to the careful discussion offered by the two authors. Mr. Creamer, at one point, touched upon the question of accounting for quality improvements, saying that the failure of available price indices to allow for such improvements is a virtue for the purpose of analyzing capital-output ratios. This is certainly true with respect to the numerators. As regards the denominators, I am not sure whether something might not be said in favor of a quality adjustment should it some day become feasible. Another topic whose theoretical angles deserve further exploration is the question of whether gross or net stock is a better measure of capital input and productive capacity. The ideal measure for the present purpose might well be the excess of gross stock over such depreciation as reflects physical deterioration only. Physical deterioration means a reduction in the capital input able to contribute in producing physical output. Accruing obsolescence, while it impairs the ability of the capital goods to yield quasi-rents to their owners and is therefore quite properly included in business depreciation charges for profit-computing or tax purposes, does not impair the ability of the capital assets to produce physical output in preobsolescence quantity and quality. Hence, it cannot be regarded as a reduction of capital input in the sense here relevant. Finally, in respect to the capital coefficients of the last few years, so far as their numerators are based on balance-sheet data, I would like to raise the question of whether the time has not come to investigate what downward bias may have been imparted to some capital stock figures, and, hence, to some capital-output ratios, by the growing importance of leased equipment which does not show on the assets side of company balance sheets.

Next, as to interpretation. For an explanation of the declining trend of total fixed assets per unit of output between the two postwar periods, the broad general fact that stands out before all others is the far slower rise, ever since the end of the Great Depression, of investment in business plant as compared with investment in producers' equipment. To see the explanatory significance of this fact, it suffices to recall that, according to estimates by Messrs. Wasson and Wooden in their November, 1956, article in the *Survey of Current Business,* the ratio of net plant to production in manufacturing in 1955 was still only about 52 per cent of what it had been in 1929, whereas the ratio of equipment to output had by 1955 more than regained its 1929

level. Estimates by the Machinery Institute for private business as a whole tell a similar story.

Various factors have combined in producing this development. There was, first, the steeper rise for a number of years of business construction costs as compared with prices of machinery and equipment. Probably even more telling were the aftereffects of a long-term technological change of which Mr. Borenstein in his *Occasional Paper* on mining has reminded us and which, no doubt, was equally important in manufacturing. In the days when it was the rule for the prime mover to be located in the plant, optimum sizes of plants were generally high, frequently above actual sizes. Hence, in those days, enlargement of industrial capacity usually called for substantial new investment in plant. The gradual switch by industry to meeting power requirements by purchased electrical energy has changed this. For the purpose of adding productive capacity, plant and equipment have become less strictly complementary, as is confirmed by Mr. Butler's finding that in recent years it was possible to a certain extent—undoubtedly to a much higher extent than would have been possible around 1920—to create additional manufacturing capacity by adding or modernizing equipment only. It is a question, in fact, whether changes in the stock of equipment have not become better indicators of changes in capacity than are changes in the stock of total fixed assets. At any rate, it can be said that the significance of the factor "plant" for capacity developments has in the last two decades kept underground, as it were. Obviously, this cannot go on forever. Eventually the time must come when the equipment of the country is so "ill-housed" that a marked upsurge in industrial construction may be expected, no matter how the relation between equipment prices and construction costs develops. But it appears unlikely, on the basis of a recent report by the Commerce Department on the outlook for construction in 1958, that any upsurge of industrial building, even if it should already be in the cards as a long-term expectation, will get under way very soon.

This discussion leads to a broader problem which Mr. Creamer has touched upon. Can the two observed trend reversals in capital coefficients be explained by assuming that capacity-raising activity has, on the whole, become increasingly capital-saving or at least progressively less capital-requiring between the two world wars, and again increasingly capital-requiring later on? It may be useful to distinguish two questions here. The first: Do we have any evidence that technology itself has evolved so as to bring about this development? In two limited respects the answer may be yes. There was the broad technical change discussed above which, for quite some time, lessened the need for plant expansion—usually a highly capital-requiring action. And there is a countervailing fact which has recently begun to be operative: Automatic processes, highly capital-requiring yet profitable, have become technically possible in more and more fields. For the rest, it is extremely questionable whether we can say with any safety that at some period the variegated crop of technological innovations harvested during the period was as a "weighted average" more capital-saving or more capital-requiring than the crop reaped in a preceding period. But the question of a changing relative importance of

"saving on capital" may be raised in another and more promising sense. While business always tries to "save," i.e., to economize, on all input factors, we may nevertheless be able to specify economic changes which tend to raise (or to reduce) the relative importance of economizing on the factor capital. Mr. Butler has offered a valuable suggestion pointing in this direction by mentioning the possibility of a connection between the rise of corporate income tax rates since the early thirties and the decline in capital coefficients. At the Machinery Institute we have recently analyzed, with respect to investment in a wasting durable asset under specified assumptions as to contour of gross operating earnings, tax depreciation method, and rate of interest, the interrelation between investment cost, service life, and rate of income tax. The higher the tax rate, the longer, for any assumed investment cost, must be the service period (i.e., the period during which taxes, capital consumption, and net return as specified by the interest rate can be covered out of the gross earnings) to make the investment "break even." Or, stating the same interrelation from the other side, the lower, for any assumed service life, must be the investment cost. This means that the higher the tax rate, the more important it becomes to economize on the factor capital when choosing between alternative ways of raising capacity. In the models we analyzed, the sensitivity of the break-even service life (or, for an assumed life, of the break-even investment cost) to changes in the tax rate increases rapidly with the level of the existing rate. So the analysis supports the inference that the first few tax increases over the low rates of the twenties have retarded the revival of business investment in a moderate degree, thus mildly contributing to the trendwise decline of the capital coefficients, and that a rise of corporate tax rates above the present 52 per cent level would have a similar but much stronger effect. Thus the many caveats by which Mr. Creamer and Mr. Butler have hedged their tentative conclusions about near-future prospects for business investment and capital coefficients may well be rounded out by adding another: Much will probably depend on what is going to happen to corporate tax rates.

ROBERT C. WASSON: There are two general aspects of Dr. Creamer's paper which I shall consider briefly. They are the choice of the measure of capital, including both the definition and the desirability of disaggregation, and some of the statistical problems related to making or interpreting the estimates.

The first point relating to Creamer's definition of manufacturing capital is the use for the period prior to 1948 of an undifferentiated total for inventories, working capital other than inventories, and fixed assets. It may be justified on the grounds of brevity for the purpose of this paper, but it makes an evaluation of the conclusions more difficult.

The Commerce estimates indicate that differences between the movements of the structures component of net assets and of equipment and inventories are quite significant. Structures in constant dollars showed no increase from 1929 to 1948 as compared with a two-thirds increase in equipment and increased by about one-third from 1948 to 1955 while equipment increased by almost two-fifths. The restriction of the definition to one of equipment would

substantially affect the capital-output ratios, probably eliminating the decrease from 1929 to 1948 but magnifying the increase from 1948 to 1955. Furthermore, if one could adjust for the probably abnormal situation in 1948, the trend of equipment-output ratios would have risen from 1929 to 1948 as well as from 1948 to 1955.

Creamer's total capital series increased 24 per cent from 1929 to 1948, only 4 per cent less than the Commerce structures, equipment, and inventories net asset series. The Commerce and Creamer net fixed assets diverge greatly for the period 1948-53, however, the former increasing by only 16 per cent whereas the latter increased by 42 per cent. An explanation of this latter divergence must wait on the availability of Creamer's detailed statement on methodology.

Another problem in definition relates to the use of net assets. There is undoubtedly much interest and great value in this measure, but I think it should be supplemented by one or both of two alternative measures of capital, gross fixed assets, and depreciation. The use of net assets here assumes that the physical productivity of fixed assets declined to the extent indicated by the cumulative depreciation allowances. The existence of any great decline in physical productivity over the major portion of accepted service lives, to the contrary, is possibly quite exceptional. The advantage of the use of depreciation as a measure of capital in this application may not be so obvious. The arguments for it were presented by Edward F. Denison in "Theoretical Aspects of Quality Change, Capital Consumption, and Net Capital Formation" in *Problems of Capital Formation* (Vol. 19 of *Studies in Income and Wealth*).

Within the period 1929-56, Creamer notes two phases in the movement of the capital-output ratio: downward from 1929 to 1948 and upward from 1948 to 1956. Capital-output ratios using a gross definition or depreciation instead of net assets would have declined from 1929 to 1948, but the decrease would have been slightly less. The effect of using gross assets in the 1948-56 period would have been practically the same as for net, but the use of depreciation would have resulted in an even more rapid rise. Thus, use of the alternative measures does not contradict Creamer's conclusion that declining capital-output ratios are related to periods of relatively low rates of growth. The differences in the movements of ratios based on gross and on net assets does indicate that a small portion of the decline may be attributable to the increasing age of the assets, which results in a larger depreciation reserve and thus may cause an understatement of the level of productive physical assets. The difference between movements of ratios based on depreciation and on net assets reflects the same fact plus the larger share of equipment, with higher depreciation rates, as compared with structures in new capital.

Another point which should be taken in account in analyzing the capital-output ratios is that the trend of capital requirements per unit of output may have been affected significantly by the decline in average weekly hours worked. Because of this decline, capital resources in 1956 were probably utilized a fewer number of hours per week than in 1929. If the decline in average weekly hours had not occurred, the decreases in capital services per unit of output would have been even larger than the ones shown. In projecting

capital-ratio trends, a judgment as to the change in average hours worked is necessary.

The use of a gross receipts definition of output is subject to the obvious criticism that it may not change in the same manner as actual value-added, a point mentioned by Creamer in his *Occasional Paper*. This may in practice prove to be of little moment for total manufacturing but could be a significant weakness in the analysis of finer groupings. One apparent advantage of the use of *Statistics of Income* data as opposed to the general type of approach followed by the Machinery and Allied Products Institute, Dr. Goldsmith, and Commerce is that they include breakdowns by a number of industry groups within manufacturing. As the analysis becomes more detailed, however, the weaknesses of the corporate income tax data are magnified. Examples of the problems raised are those relating to the effects of industrial integration and product diversification and to the adjustments for government-owned, contractor-operated capital. The basic need here is for establishment data. In addition, while Creamer's use of a constant amount in adjusting for government-owned, contractor-operated capital in the 1953-56 period does not affect the total manufacturing capital-output ratios greatly, it has a significant influence on the chemical industry ratio. I believe that a better adjustment is possible.

Finally, there is one statistical problem, that of service lives, which affects the validity of all capital stock estimates, including the MAPI, Goldsmith, and Commerce as well as those based on *Statistics of Income*. Data on the number of certain types of machines, mainly metalworking, classified by a few very broad age groups were published in *American Machinist 1954 Production Planbook* (McGraw-Hill, 1953). When they are taken in conjunction with other statistics, such as the annual estimates of equipment purchases, they indicate an average age upon retirement substantially in excess of the average service lives Commerce used for this type of equipment.

The retirement figures, however, do not necessarily contradict the service lives taken from Internal Revenue Service *Bulletin F*. The latter are meant to represent years of normal usage. Our knowledge of service lives, however, is clearly inadequate. For this reason we need surveys which will reveal the amount of equipment in terms of orginal cost dollars of various types by age and current extent of use.

The extent to which conclusions in the capital stock studies would be affected by changes in the service life assumptions would depend on which specific conclusions are to be considered as well as the amount of change in the service life assumptions. A rough check I have made for the 1929-55 period indicated that a substantial increase in the over-all average service life used for manufacturing equipment would imply only a relatively slight change in the movement of net assets. The effect on depreciation, however, would be greater.

Mr. Butler's use of data to estimate the possible duration of a downswing in investment is very interesting and highly imaginative. It is subject, of course, to the weaknesses usually inherent in any attempt to guess the duration or extent of short-run fluctuations by reference to trend lines. I am sure, how-

ever, that Butler is as aware of this as he seems to be of the imperfect nature of some of his data. In regard to the latter I have a very few comments to add.

The use of quinquennial and decennial averages of profits derived from the MAPI studies may tend to hide the influence of the annual changes in profits.

One method of removing the effect of price change in relating profits to capital assets is to deflate both. The difficulty in deflating profits in a satisfactory manner is much greater, however, than in deflating physical assets even though the latter task is not a simple one. For this reason, the general approach followed by MAPI in computing the rates to which Butler refers seems preferable. This is to leave profits undeflated but adjusted for a revaluation of depreciation, and relate this adjusted result to capital assets which are on a current-year (not original cost) basis. The importance of the depreciation revaluation adjustment in this procedure should not be exaggerated. In the Commerce estimates it did not affect the long-term trend in the share of manufacturing income accruing to property. It lowered the latter series by 2 or 3 percentage points (or roughly one-tenth) both in 1929 and in recent years.

Finally, we should strongly endorse Butler's suggestions as to capacity studies for individual industries.

RAYMOND W. GOLDSMITH: These two papers deal very competently with important economic problems—the relation of capacity to actual and potential output in manufacturing—and they raise a number of interesting questions. I am afraid, however, that the statistical foundations of both papers are not always sufficiently strong to carry the weight of the superstructure of analysis and interpretation that is put on them. This is not the fault of the authors, who are well aware of the shortcomings of their materials, but reflects the insufficiency of the basic data and the lack of adequate previous discussion of the basic problems.

Creamer's paper, for instance, uses as its main tool the ratio of total capital of a number of manufacturing industries, obtained by deflating the balance-sheet value of assets, to the total value of output similarly deflated. Clearly, several important features are not isolated when this "capital coeficient" is used. To mention only the most obvious ones, the coefficient makes no allowance for changes in degree of utilization of capital, understood as the relation between actual utilization and either customary full utilization, physically maximum utilization, economically optimum utilization or, as Butler suggests, the highest previous actual level of output. Nor does the coefficient allow specifically for changes in the structure of assets, including even such items as cash and short-term securities in the numerator and thus combining components of capital having purely financial with those having technological relations to output; or for the change in the ratio between net and gross output. Changes in any one of these factors—and possibly in others—may easily swamp changes in what Creamer, together with many other students of the subject, seems to regard as the main purpose of the capital coefficient; viz., the characterization of technological innovations as capital-saving or labor-saving.

Indeed in some cases we can show that movements in even a single one of

these factors are likely to obliterate changes in the capital coefficient as calculated by Creamer. His Table 1 shows a decline in the coefficient from 1937 to 1948 from 0.74 to 0.61 and a subsequent increase from 1948 to 1956 from 0.61 to 0.66. It is fairly certain that the ratio of actual to customary full utilization was considerably lower in 1937 and 1956 than in 1948. For 1956, the estimates of McGraw-Hill put the ratio at 86 per cent; for 1948 it may be estimated at close to 100, while it should have been well below 80 in 1937. If we accept for argument's sake these or similar figures for the capital coefficient in terms of customary full utilization—and this surely is the ratio relevant for most technological relations involved—both of the movements distinguished and analyzed by Creamer disappear, and we obtain for all three dates a value of slightly below 0.60 for the ratio of total capital to output at customary full utilization. Does this mean that innovations were "neutral" over this twenty-year period? If rough adjustments for changes in the degree of utilization make such a difference in the average coefficient for all manufactures, might they not also affect, and possibly in a very significant way, the differences in the changes among industries which Creamer analyzes so carefully?

Time is insufficient for consideration of many interesting questions of detail which Creamer's paper raises—such as the appropriateness of deflated original cost as a measure of capacity; the adequacy of the deflators used, particularly for individual industries, a point illustrated by Creamer's own remarks on his estimates for the aircraft industry; and the use of so distant a price basis. I shall therefore take up only one main point in Creamer's paper: his designation of the rate of expansion of the stock of manufacturing capital as the cause (Creamer cautiously says "clue") of the movements in the capital coefficient, and more particularly his assertion that high or rising rates of growth of the net stock of capital cause an increase in the capital coefficient while low or falling rates lead to a decline in the coefficient. It is not the accuracy of the association which I am questioning. It would seem, however, that we might as well—and in my opinion with even better reason—claim that it is the tendency of output, net investment, and capital stock to move in the same direction and the tendency of investment and capital to vary more than output over decadal or similar periods, which explain the positive correlation between the capital coefficient and the rate of growth of either capital stock or output. This leaves the greater amplitude of the variations in investment and capital to be explained, but Creamer's approach implies the even stiffer challenge of devising a theory of the rate of growth of the capital stock. Moreover, one explanation of the wider amplitude of the fluctuations in the capital stock is suggested by Butler, viz., his finding that capital expenditures are geared to internal funds, which may be combined with the observation that internal funds show wider swings than output, partly because of the policy of stabilizing dividend payments.

To make a small positive contribution to the discussion, let me now put the estimates of the capital coefficient for the manufacturing industries in the broader framework of the economy as a whole, with the help of recently completed estimates, continuing those in Volume III of *A Study of Saving*

in the United States, which are essentially subject to the same limitations as those used by Butler and Creamer. From the end of 1946 to the end of 1956, the stock of reproducible capital assets of the manufacturing industries—including plant, equipment, and inventories—increased by about 54 per cent in terms of 1947-49 prices—not too different from Creamer's figures, which indicate an increase by 50 per cent between 1948 and 1956. This compares with an increase of 49 per cent for the total reproducible tangible wealth in the economy and with one of 54 per cent for the possibly more relevant total for all business (including multifamily housing). The capital coefficient for the entire economy, calculated as the ratio of reproducible tangible wealth (excluding military assets) to net national product, both in 1947-49 prices, increased slightly between 1948 and 1956—from about 2.70 to 2.85—but remained virtually unchanged at slightly above 2.35 if consumer durables are excluded from wealth.

As we do not possess estimates of real net national product originating in the different sectors—at least none has been published—we cannot obtain sectoral capital coefficients quite comparable to the national figures. Probably the best we can do at the moment is to compare the movements of reproducible tangible wealth in 1947-49 prices in different sectors with indices of the physical volume of output. These, of course, measure gross output, but we may hope that no significant changes in the net-gross ratio have occurred during the period except in agriculture, where an index of net output fortunately is available. We then find that the capital coefficient for manufacturing and mining is virtually the same in 1953 and 1956 as it had been in 1948. Thus, this calculation does not show the upward movement of Creamer's figures. If the coefficient were adjusted for the lower degree of capacity utilization in 1956, compared to 1948, it would show a small decline instead of the stability of Creamer's adjusted figures. All this means is that we are still far from the point where we could assert with confidence that we know what actually happened to the capital coefficient of manufacturing during the postwar decade.

The stability of the capital coefficient of manufacturing as here calculated is in line with the national total excluding consumer durables. It contrasts with a considerable decline in the capital coefficient of the power and transportation industries and with a small increase in the capital coefficient of agriculture, the only two other business sectors for which we have measures of output permitting a comparable calculation. We may, however, infer that for all other business (essentially trade, services and nonresidential real estate) no substantial change occurred in the capital coefficient. On the basis of this set of figures, it is thus doubtful whether there has been any pronounced change since 1948 in the capital coefficient of business as a whole or of a broad section of it with the exception of the decline in public utilities, which apparently reflects primarily increasing efficiency.

Because the prices of capital goods increased more than the gross national product deflator, an increase in the capital coefficients in current prices over the postwar decade is compatible with the stability of the ratios just discussed. For the nation as a whole, the capital coefficient (including consumer dur-

ables) based on national product in current prices and replacement cost of reproducible wealth rises from a little over 2.70 in 1948 to nearly 3.00 in 1956. For manufacturing, it increases from 1.23 to 1.37. The movement of the manufacturing coefficient thus again is parallel to that for the national total.

There is, to conclude, one point in which I fully agree with both papers and which, it seems to me, is more important than any of the substantive statements contained in the papers or any comments made on them. This is the complaint voiced by both authors about the inadequacies of the basic materials with which they had to work. Butler and Creamer probably have squeezed as much out of the data as they will yield, and on several points, I am afraid, even more. Progress in the study of the relationship between capital and output clearly now is dependent on more, better, and more relevant data on a whole host of topics from the anticipated and actual service lives and disposal values of different types of structures and equipment to the methods of property valuation and depreciation accounting used by the different sectors of the economy, and all this for individual plants and enterprises as well as for aggregates of varying scope. Apart from the perennial stepchild of economic statistics—small business—there is hardly a subject in which the gap between what we ought to know and what we do know is so serious, considering the importance of the missing data for economic theory and public policy as in the field of investment and capital stock.

INCOME AND CONSUMPTION

INDIVIDUAL INCOMES AND THE STRUCTURE OF CONSUMER UNITS

By Dorothy S. Brady
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The Disposition of Individual Incomes

Family relationships, by prescribing the responsibilities of individuals for other persons, govern the final stage in the distribution of income over the population and set the primary conditions on the allocation of consumer expenditures among the various goods and services. A man's income may be distributed in money or as payment for their needs to his wife and minor children sharing his home, to a son or daughter away at college, and to his elderly parents residing in another place. The commitments individuals make for the support of relatives determine the composition of consumer units in a particular period of time and the ways in which the needs of their members are satisfied. With sufficient income a man can contribute to the maintenance of his parents and of a grown son or daughter in separate living quarters but low incomes may impel the three generations to dwell in one household. The modes of sharing individual incomes with other persons must depend on their resources, the degree of the relationship, and the nature of their needs. The financial responsibility assumed by an individual for the support of another adult is guided by their comparative needs but is probably determined by the differences in their incomes.

The sharing of incomes has generally been used in empirical studies of the distribution and disbursement of income to define the consumer unit, and the sharing of living quarters has served to identify the groups of persons depending on the same sources of income. The combination of individuals living in a separate dwelling on a particular date or over some period of time, usually a year or less, has been treated as an independent entity whose position on the income scale and behavior in the market can be explained in terms of its demographic and economic characteristics and without reference to other such units. The occupancy of a separate lodging has served both as a necessary and as a sufficient criterion of financial independence for the purpose of analysis, although the complete recording of the sources of income always reveals a substantial number of consumer units depending on "gifts" of money from relatives not sharing the same living accommodations. If

the personal arrangements individuals make for sharing their incomes are adjusted to fluctuations in the economic situation, the corresponding changes in the composition of consumer units may affect all forms of behavior associated with income which are observed in a cross-section study.

The broad scope of the surveys of individual and family incomes and of consumer outlays in recent years makes it possible to examine the association between the composition of consumer units and the incomes of their members and to trace the general connections between consumer units in different economic situations. Some general outline of the positions of individuals in the system of family relationships is necessary to an understanding of their economic behavior at the present time and some concept of the stability or change in the influence of family ties on the individual is needed in the investigation and interpretation of historical trends. A comparison of the cross-section consumption and saving functions among the families of wage earners and lower salaried workers around 1900 and today would have to take account of immigrant's remittances—the most widely noted form of "contributions to the support of relatives" at the beginning of this century. Sending money home as a custom could certainly not have been limited to the immigrants and many of them in turn must have received money from sons, and occasionally daughters, who found employment away from their home towns. Aside from explaining the size of "income from other sources" than earnings among the low-income families in the consumption surveys fifty or more years ago, the absence of a substantial number of teenage sons from their family homes must have influenced the distribution of consumer expenditures among the various classes of goods and services.

Income and the Number of Consumer Units

The existence of a consumer unit depends on its income relative to its size, since no group of persons with little or no income can maintain a separate household for an extended period of time. Whatever the sources of income—earnings, rents, interest, dividends, pensions, relief payments, or gifts from relatives—there must be some assurance of its continuance if the members of a particular consumer unit keep on living apart from other persons. Groups of persons with insufficient incomes must either find ways of increasing their incomes to the level of their normal expenditures or merge with other households.

The estimation of the amounts of income required to maintain households of different size and composition has received a great deal of attention from investigators with every sort of interest in the ultimate consumer's conduct of his affairs. Although the methods used in de-

riving scales of equivalent incomes for different types of families and the purposes they were designed to serve have varied greatly over time, the results have exhibited a remarkable uniformity. Stability in the relative income needed to support households of different size and composition has, of course, a tautological base—more persons require more food—but it must also mean that the distribution of wants within the households of various types is always related to a common standard of what is necessary. The cost of supporting a person of given age and sex varies inversely with the size of household; so that small households are the most expensive to operate in terms of per capita expenditures. An invariant scale of requirements for households of different types leads to comparatively large consumer units in low-income situations and to smaller units when there are sufficient resources to maintain them.

There has always been a general correspondence between the incomes of consumer units of varying size and the scales of relative need, which can be taken as evidence of the adjustment of living arrangements to living standards and the income situation. Furthermore, the correlation between the average (mean, median, or modal) incomes of consumer units and their sizes within occupational groups in different communities has been much the same at various dates, a fact which indicates some uniformity in the conditions for various types of living arrangement from time to time and from place to place. The number of consumer units is evidently determined by the ways the incomes of related individuals can be used in the maintenance of all members of their family in one or more dwellings.

An individual is primarily responsible for himself, his wife, and his young children and the individual and his immediate dependents usually live in the same place. The individual's contribution to the care of his parents, his "in-laws," and his grown children will depend both on his income and his direct responsibilities for his wife and young children. If incomes imposed no limitation on the living arrangements, the number of consumer units would tend towards a maximum defined by the distribution of the members of the family by age, sex, and marital status. The actual number of units at any time will be determined by the relative incomes of persons with income, their immediate responsibilities, and their position in the system of family relationships. All of these elements change with the age of the individual.

If the continued existence of a group of related persons as a separate consumer unit depends on a correspondence between their financial resources and their standard of expenditures, the distribution of the incomes of a particular type of unit in a given year will be a combination of two distributions: one reflecting the prevailing scales of

living among units of this type and the other the situation of transitional or transitory units. The general income distribution which is a compound of the distribution of units by type and their distribution by income will change in form with variations in the relative importance of the different types and the relative frequency of transitional units. The relative distributions of the "permanent" units of each type by income may be expected to impart an underlying stability to the form of the distribution for the entire population. The preliminary results of an analysis of the bivariate distributions of consumer units by type and income, using the concepts and procedures developed by Friedman for the study of the consumption function, indicate that the number of transitional units at any time is correlated with significant secular changes in incomes.

For the purposes of an analysis of the connection between the incomes of individuals and their grouping in consumer units, the average incomes of the various types serve to determine the relative requirements of units of various types and to define a level below which there is a concentration of the transitional units.

Age, Income, and Family Responsibilities

The average incomes of the men and women who live apart from relatives (called "unrelated individuals" by the census and "single consumers" by the Bureau of Labor Statistics) can, accordingly, be taken as a measure of the cost of maintaining one-person units in an appraisal of the income situation of all persons of the same age. The comparison of the incomes of single consumers and their age groups (Table 1) indicates that substantial numbers of young and of elderly persons cannot afford to live independent of their relatives. Their incomes do, however, compare favorably with the marginal outlay per person near the average income among households with heads either old enough to be the parents or young enough to be the children of the individuals of that particular age group. The earnings of a son or daughter, the pension of a grandmother, can make a real contribution in a household where the income would otherwise fall below the scale of living. A family can care for a person without income within a household of several members on a much lower outlay than "lodging" or a separate dwelling would require.

The responsibilities of parents are greatest when they are between thirty-five and forty-five years of age and, in general, the incomes of men in this age range come closest to providing for their immediate families. In the progressively younger or older age groups the size of the family decreases but the negative difference between men's incomes and the cost of supporting the families steadily widens, never-

theless. Although the relative number of women responsible for families increases with age, the incomes of women of all ages are low compared with the amounts needed to maintain households of two or more members.

The greater number of persons with incomes below the average for single consumers live in private households of two or more members

TABLE 1

AGE, INCOME, AND LIVING ARRANGEMENTS

Median Incomes of All Persons and of All Secondary Individuals with Income, 1949, by Age and Sex and Rate of Change in Average Income with Size of Family among Urban Families Classified by Age of Head, 1950

ITEM	AGE (YEARS)						
	14–19	20–24	25–34	35–44	45–54	55–64	65 and Over
Persons with no income (per cent)							
Men	50	10	3	3	4	7	17
Women	61	43	56	44	53	56	48
Median income of persons with income (dollars)							
Men	435	1,669	2,737	3,073	2,979	2,551	1,128
Women	419	1,276	1,309	1,358	1,316	1,006	602
Median income of secondary individuals (dollars)							
Men	700	1,200	1,952	2,090	2,160	1,920	770
Women	500	1,050	1,730	1,273	1,500	1,250	636
Rate of change in average family income with size (dollars)							
Change from 3 persons		324	619	661	706	706	680
Change from 4 persons		113	210	350	365	365	360

SOURCES: U.S. Bureau of the Census, *1950 Census of Population, Bulletin P-C1*, U.S. Summary, Detailed Characteristics; *Special Report P-E*, No. 20, Marital Status, and University of Pennsylvania, Wharton School of Finance and Commerce, *Study of Consumer Expenditures, Incomes and Savings*, 1950, Vol. I.

and regardless of their marital status and the number of their children they tend to combine with other more or less fortunate relatives. In all age groups the number of persons living with their parents or with their adult children increases steadily as the incomes are decreased, an indication of the strong economic base for the doubling up of the generations in the same household.

As individual incomes approach and exceed the total for households of average size, the proportions of men and of women exclusive of married women, "husband present," who are heads of households or are living as single consumers, increases towards a level characteristic of the age group. Among those whose incomes amounted to $4,000 or more in 1949, for example, the relative number of men who were heads of families or single consumers rose from 45 per cent among the 14-19

year olds and 63 per cent for the age group 20-24 to 90 per cent or more for all older groups.

These connections between age, income, and family status which reflect the strength of family ties in the utilization of individual incomes, indicate that the incomes of persons in a particular age group are not very closely correlated with the incomes of their parents. The age cycle of incomes, the devotion of the younger age groups to their education and training, the rise of children above the occupational level of their parents, combined with contingencies such as the death or disability of the father, tend towards the negative and offset positive correlations between earning power and family background. True the correlations between the incomes of the children and their parents who dwell together are negative, but this association must be an explanation of their living arrangements. Separate households are the rule when both the children and their parents can afford them and seem to prevail when one or the other has sufficient income to help finance more than one consumer unit.

The Sharing of Individual Incomes

If, at a given time, the distribution of their parents' incomes is the same for the individuals of a given age within every income bracket, and, conversely, the connections between individual incomes and living arrangements will be reflected in the distributions of the two age groups, separately, by income and family status. Since the distributions by family status and income serve as first approximations to the frequencies of the "sharing" of the two incomes, the child's and the parent's, the complete form of the cross-distribution can be estimated from the two approximations and the two marginal income distributions. The procedure of estimation and the nature of the results can be displayed best through an illustration for a particular pair of age groups.

Let the "parents" of young men 20-24 years of age, assumed to be in the age range 45-64 (a matching limited by the age classes defined in the statistical sources), comprise the men of that age who were ever married and the women of that age who are widowed, divorced, or separated from their husbands. The income distributions of the sons and of the parents and the distributions by family status within income class shown in Table 2 serve to block out the two-way distributions of the frequencies of combined incomes and living arrangements. Assuming that the lower the parents' income the greater the probability that the son lives "at home" with his parents involves associating the numbers in the family status distributions with the successive frequencies in the various income brackets. Thus the 42 per cent of sons with in-

comes in the brackets $1,000-$1,999 and $2,000-$2,999 called "child or other relative of head" are associated with the 42 per cent of the parents with incomes under $2,000. (The 13 per cent of parents in the status "parent or other relative" are identified with the children whose incomes equal or exceed $3,000.) This matching of the family status frequencies with the income distributions leads to an isolation of the income situations that determine whether the two generations dwell in the same place or occupy separate living quarters. In this example it appears that (1) sons live in their parents' homes or provide

TABLE 2

INCOME AND FAMILY STATUS

Distribution of Men 20–24 Years of Age and of Their Parents 45–64 Years of Age by Income Group and Distribution by Family Status within Income Groups, 1949

Income Class	Percentages by Incomes		Percentages by Family Status					
			Sons			Parents		
	Sons	Parents	Total	Child or Other Relative	Head or Unrelated Individual	Total	Parent or Other Relative	Head or Unrelated Individual
Under $1,000	35	27	100	66	34	100	13	87
$1,000– 1,999	28	15	100	42	58	100	4	96
2,000– 2,999	23	19	100	42	58	100	3	97
3,000– 3,999	11	18	100	38	62	100	2	98
4,000 and over	3	21	100	37	63	100		100
Total	100	100	100	51	48	100	6	94

SOURCE: U.S. Bureau of the Census, *1950 Census of Population*, Special Report P-E.

for their parents in their own homes, irrespective of their incomes, when the parents' incomes are under $2,000; that (2) when the sons' incomes exceed $1,000 and the parents' $2,000, they maintain separate domiciles; and that (3) sons with incomes under $1,000 live with their parents when the parents' incomes are under $3,000 and tend to live apart when the parents' incomes are above this level. Many of these 20-24 year olds with low incomes are college students living as single consumers or as householders with their wives and perhaps children. (The group which was matched here with parents in the income brackets over $3,000, which numbered nearly 700,000, must have a substantial overlap with the group of 650,000 men 20-24 who were enrolled in school and either not in the labor force or recorded as unemployed.)

The scheme suggested here for estimating the probabilities of combinations of individuals in consumer units as functions of their incomes is not simply an alignment of the data to conform with a particular

set of assumptions. Some such rules or combination must operate to produce the changes observed in going from the distribution of families by the incomes of their heads to the distribution by the total income for the entire family. The additions to the incomes of the heads tend to move family units from the lower income brackets mainly into the center of the income range and change the upper part of the distribution less than the lower. In the illustration presented here the incomes of the 20-24 year olds that were shared with their parents would raise the median income of the parents, $2,421, to a median of $3,293 for the family, a difference of $872. The actual differences observed between the median incomes of heads 45-64 years of age and the median incomes of their families—$599 for husband-wife families, $788 for other families with male head, and $1,143 for families with female heads—would not differ substantially, in combination, from the illustrative figure.

The ranges of individual incomes within which the sharing of incomes and of dwelling units prevails appear to be related to the changes in family responsibilities along the age cycle. The separate units headed by young men 20-24 years of age are small, with one or two persons predominating, while larger families of three or more persons are still numerous among those with head 45-64 years of age. With incomes above $1,000, about the median for secondary individuals 20-24 years of age in 1949, young men could be self-supporting and with the assistance of their wives maintain their own households. Incomes less than $2,000 would, however, not be sufficient for the majority of their parents with other children to support. With growing families the relative needs of the younger and the older generation begin to reverse.

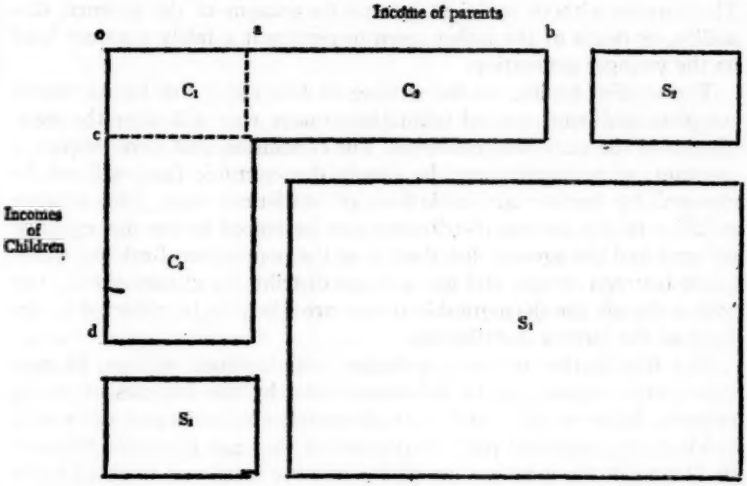
The incomes of men 25-34 years old when matched with the incomes of the age groups that include their parents indicate that sharing living arrangements is the rule when the parents' incomes are less than $1,000 and the sons' less than $3,000. At incomes above $3,000, contributions to the support of their parents in separate quarters become customary. Of the 25-34 year olds with incomes under $1,000 in 1949 the relative number living with their parents is approximately equal to the proportion of fathers and widowed mothers with incomes under $2,000.

Distribution of the Population in Consumer Units

The conditions for combinations of adult children with their immediate dependents and their parents in the same household inferred from the distributions of individuals by family status and income can be described schematically by marking the boundaries in the correlation table of their incomes within which combined or separate households are most probable (Diagram 1).

DIAGRAM 1

COMBINED AND SEPARATE CONSUMER UNITS IN RELATION TO INCOMES OF PARENTS AND CHILDREN



The area S_1 represents the part of the joint distribution in which parents with incomes exceeding *a* and children with incomes of *c* or more have separate domiciles and can be assumed on the whole to be financially independent and self-supporting. The area S_2 includes the children who are living apart from their parents, most of whom, though not yet independent, will be found in higher income brackets in later years. Among the low-income parents in the position S_3 who are partially dependent on their children's contributions and hence incomes for the maintenance of their separate living quarters are many that will "move in" with their children in later years. Among the areas that lead to combinations C_2 includes the consumer units that are most likely to "undouble" in the course of time. The children still living with parents of modest income are likely to establish their own homes after they have sufficient experience in the labor force. The areas C_1 and C_3, on the other hand, include a substantial proportion of combinations that will persist because the parents' incomes are permanently low.

Full employment and the favorable income situation of the postwar years have not significantly altered the expected number of women 35 or older who are widowed, divorced, or separated from their husbands nor reduced greatly the relative number in this group with little or no

income. The proportions of men in the age groups of peak earning power who earn very little or nothing at all have declined but a considerable number remains, perhaps the underlying group of the disabled. The parents without sufficient income for reasons of the absence, disability, or death of the father seem to represent a fairly constant load on the younger generation.

The studies leading to the writing of this paper are by no means complete and some special tabulations under way will alter the magnitudes of the statistical estimates. The conclusion that some empirical constants of economics may be simply demographic facts will not be changed by further accumulations of statistical data. The relative stability of the income distribution can be traced to the age cycle of incomes and the age-sex distribution of the population. Both the correlation between income and age and age distribution change slowly, but over a decade the demographic trends are likely to be reflected in the form of the income distribution.

The distribution of the population, standardized for age, in consumer units appears to be influenced most by the incomes of young persons. Between 1949 and 1955 the number of consumer units with heads 20-24 years old per 100 persons of that age increased from 28 to 32 and in the next age group the number increased from 42 to 44 while the ratios for all older groups remained the same. (There are 50 consumer units per 100 persons in the age group 35-44, 55 in the age group 45-54, 60 in the age group 55-64, and 63 in the age group 65 and older.) Over that period of time the incomes of young men increased more than the average while the incomes of the older women most likely to be dependent on their children did not keep pace with the general trend. The rise in the relative number of consumer units in the younger age groups as well as the stability in the relative number in the older age groups may be traced to the proportion of younger men and women who can afford as much as $25 a month to supplement the small pensions, annuities, and benefits that permit so many of the elderly to keep their own homes.

FACTORS ASSOCIATED WITH INCOME VARIABILITY*

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In recent years, economists concerned with household behavior have become increasingly aware of the desirability of obtaining observations of identical individual units over time. Time-series analysis dealing with aggregates has the disadvantage of providing us with very few observations, and further, the aggregation process itself may obscure relationships in which we are interested. Cross-section surveys can provide us with extremely valuable information on relationships in the form of distributions of variables in the population at a given point in time, yet such surveys provide us only with static "flash photos" at certain points; and while marginal totals for various distributions may remain the same in consecutive years, this may be the result of shifting of a considerable number of individuals with such shifts canceling each other out over the population as a whole. Connected with this is a concern with the relevant accounting period over which to measure certain variables. For example, two recent theories of consumer saving[1] have been based on the assertion that a family's income in a given year, as reported in a cross-section survey, is not the relevant income for explaining its saving behavior. Rather, its income over some longer period of time should be considered.

Inasmuch as surveys relying on respondents' recall of income changes from previous years appear to be greatly affected by memory errors, some type of "reinterview" procedure is necessary.[2] Such a reinterview study was carried out by the Survey Research Center over the years 1954-56, under a grant from the Ford Foundation. A representative cross-section of the urban population of the United States was interviewed in June of 1954 and reinterviewed in December of 1954, June of 1955, December of 1955, and March of 1957. Attempts were made to follow panel members who moved, but inevitably some

* This analysis was initiated at the Survey Research Center as part of a study directed by George Katona under a grant from the Ford Foundation for a study of the origins and effects of changes in economic attitudes.

[1] M. Friedman, *A Theory of the Consumption Function* (Princeton, 1957). F. Modigliani and R. Brumberg, "Utility Analysis and the Consumption Function: An Interpretation of Cross-Section Data," in *Post Keynesian Economics*, ed., K. Kurihara (New Brunswick, N.J., 1954).

[2] For an analysis of income tax forms collected over the years 1929-35, see F. Hanna, J. Pechman, and S. Lerner, "Analysis of Wisconsin Income," *Studies in Income and Wealth*, Vol. 9 (New York, 1948). For an analysis of interviews of farm families over the years 1940-42, see an unpublished manuscript by M. Reid, "The Relation of the Within-Group Transitory Component of Income Elasticity of Family Expenditures."

were lost and others refused interviews as time went by. Of 1,153 interviews on the first round, 707 were still in the panel almost three years later. As far as we could tell, however, those who gave all five interviews seemed quite representative of the original respondents.[3] Additional exclusions for the purposes of the present analysis consisted of 27 families[4] who failed to provide complete income information for one or more of the three years 1954, 1955, and 1956, and two spending

TABLE 1

PERCENTAGE DISTRIBUTION OF SPENDING UNITS BY INCOME CHANGE (1954–1955–1956)

		Changes of 25 Per Cent or More		
		1955–56 Change		
		Up	No Change	Down
1954–55 Change	Up	3%	14%	4%
	No change	14	51	4
	Down	4	4	2
		Changes of 5 Per Cent or More		
		1955–56 Change		
		Up	No Change	Down
1954–55 Change	Up	17%	13%	15%
	No change	16	9	5
	Down	14	5	6

units with incomes of over $100,000, thus leaving us with a sample of 678 cases.

The first question we might ask is: How common are income changes?[5] Of our 678 spending units, half had a change of at least 25 per cent of their income over the three years 1954-56. (See Table 1.) Thus, if we examined family incomes for 1955 (the middle year), half of the respondents either had experienced a big income change from 1954 or would experience such a change in 1956. (In fact, 13 per cent had a big change both in 1954-55 and 1955-56.) Even if we attempted to winnow out fluctuating incomes by examining only those families

[3] For further details, see a forthcoming article by M. Gross, "Panel Mortality and Panel Bias."

[4] In this paper the terms "spending unit," "household," and "family" will be used interchangeably. For further details of the concepts and interviewing methods of the Survey Research Center, see J. Lansing, "Concepts Used in Surveys," in L. Klein, ed., *Contributions of Survey Methods to Economics* (New York, 1954).

[5] Throughout this analysis we will speak in terms of percentage change in income. While high-income groups have larger dollar changes in income, the assumption here is that a $500 change in income is less important for a millionaire than for a pauper.

with no change from 1954-55, we would still find that 26 per cent of these had a big (25 per cent) change in 1956.

Comparing just the two years 1954 and 1955, we find that 31 per cent of the families had a big change in income, 21 per cent going up and 10 per cent going down. Comparing 1955 and 1956, we find exactly the same percentages. The people who went up from 1954 to 1955 are slightly more likely to go down the following year than the rest of the population and slightly less likely to go (further) up. The people who went down are much more likely to go up, but also more likely to go even further down. In other words, if a family's income goes down, it is not very likely that it will remain at this level; either it will bounce back up again or continue downward.

Income Level and Income Change

The argument is sometimes made that one of the pitfalls of cross-section analysis is the biased picture it gives of the relationship between income[6] and other variables, because of this year-to-year variability in incomes. Thus, it is argued, if we classify people by income received in a given year, many of those in the lower income groups are temporarily below their "usual," "long-run," or "permanent" income levels, while the higher income groups will contain a larger proportion of people for whom this was a "better than average" year. The effect of such phenomenon would be to "tilt" an observed cross-section consumption function (or any expenditure function) in a clockwise direction about its mean. Thus, if the "true" (long-run) function were linear, the linear function we would actually derive from cross-section data would have a lower slope and a higher intercept.

What implications would such a phenomenon have for observations of income alone? If we sort people on the basis of income for a given year, we should find that a larger proportion of low-income people had an increase for the following year and a larger proportion of high-income people had a decline. To phrase it differently, if for each income bracket separately we calculate the percentage of people having an increase the following year, we should expect this percentage to be a declining function of income, while people having income decreases should be more common in the higher brackets.

Before examining this, a word of caution is in order. We are working with a small sample, and when we start classifying the sample into several categories, we encounter rather small cells. However, on the basis that a small and perhaps unreliable observation is better than no observation, we will proceed.

[6] "Income" here is money income before taxes. For a description of the questions asked to obtain this figure, see "Methods of the Survey of Consumer Finances," *Federal Reserve Bulletin*, July, 1950.

TABLE 2

INCOME CHANGES OF 25 PER CENT OR MORE

1954 Income	1954–55 Income Change			
	Up	No Change	Down	Number of Cases
Less than $1,000	44%	56%		25
$ 1,000–1,999	31	54	15%	48
2,000–2,999	32	51	17	78
3,000–3,999	24	65	11	102
4,000–4,999	16	80	4	109
5,000–5,999	10	83	7	104
6,000–7,499	14	76	10	103
7,500–9,999	7	77	16	61
10,000 and over	27	60	13	48
All	21%	69%	10%	678

Looking now at changes from 1954 to 1955 (see Table 2), we find that stable incomes are most common among people who were in the middle income brackets in 1954. We also find that income increases are most common among those with the lowest 1954 income, and that the likelihood of experiencing an increase declines throughout the income range until we reach the highest bracket (over $10,000). The distribution of income declines is more irregular, but the likelihood of a decline seems to increase with income. If we examine changes from 1955 to 1956 on the basis of 1955 income distribution (see Table 3B), we get pretty much the same picture.

An even clearer demonstration of this "leveling" phenomenon is obtained by comparing the pattern of 1954-55 income changes with the 1955 income distribution (see Table 3A). Here we find that 30 per cent

TABLES 3A AND 3B

INCOME CHANGES OF 25 PER CENT OR MORE

1955 Income	Table 3A			Table 3B			Number of Cases
	1954–55			1955–56			
	Up	No Change	Down	Up	No Change	Down	
Less than $1,000	18%	52%	30%	22%	70%	8%	27
$ 1,000–1,999	19	52	29	35	48	17	52
2,000–2,999	12	66	22	32	55	13	56
3,000–3,999	16	71	13	28	65	5	99
4,000–4,999	16	76	8	23	70	7	102
5,000–5,999	18	80	2	13	78	9	113
6,000–7,499	20	75	5	18	74	8	101
7,500–9,999	29	70	1	10	75	15	72
10,000 and over	38	57	5	14	75	11	56
All	21%	69%	10%	21%	69%	10%	678

of the families in the low income brackets had declined to that level from the previous year, while only a few per cent of the upper income bracket families had declined. The pattern of income increases is not as clear, though increases from the previous year were most common for the highest three groups (over $6,000).

These remarks have dealt with "big" income changes—equal to or greater than 25 per cent. If we consider smaller changes as well, say any change of 5 per cent or more, we find much the same pattern with respect to income—though, of course, changes (both up and down) are more common at all levels.

Let us now turn from frequencies of income changes to changes in mean dollar incomes for different groups. The panel as a whole had a mean increase of $350, or about 7 per cent, between 1954 and 1955, and a mean increase of $450, or about 8 per cent, between 1955 and 1956. In Table 4, families have been grouped on the basis of their 1954 income. The first column gives the mean 1954 income for each of these groups, the second column gives 1955 income as a percentage of 1954 income, and the third column gives 1956 income as a percentage of 1954 income. Looking at columns 2 and 3, we see that low income groups have a striking increase in income over the initial year. Those people in the top half of the income distribution in 1954, however, increased less than the panel as a whole. An exception to this is again the highest or over $10,000 group, which seems to obey a law unto itself in this matter of income change.

Table 5, in which families are grouped on the basis of their 1955 income (the middle year in our observations), presents an even clearer picture. Here we see that people who had low incomes in 1955 had higher incomes both the year before and the year after, while high-income families in 1955 were lower both the preceding and (relative to the sample as a whole) the following year.

Given this type of variability of income, how successful can we be in predicting a family's income next year on the basis of their income this year? Since we are speaking of percentage changes in income, let us transform incomes into their logarithms. This implies a function of the following form:[7]

$$Y_{t+1} = \alpha\, Y_t^{\beta} \text{ or } ln\, Y_{t+1} = ln\, \alpha + \beta ln Y_t$$

If everyone had the same income in both years, plotting their incomes on a chart with the first year along the horizontal axis and the second year along the vertical axis would give us a 45° line with $\beta = 1$ and

[7] This type of function was found by R. Summers to be the most suitable in his analysis of data from Survey Research Center reinterview studies of 1947-48 and 1951-52. See R. Summers, "An Econometric Investigation of the Size Distribution of Lifetime Average Annual Income," *Stanford University Technical Bulletin*, No. 31 (1956).

TABLE 4

1954 Income	1954 Mean Income*	1955 Income / 1954 Income	1956 Income / 1954 Income	Number of Cases
Less than $1,000	$ 600	240%	271%	25
$ 1,000–1,999	1,500	125	131	48
2,000–2,999	2,500	110	138	78
3,000–3,999	3,500	113	125	102
4,000–4,999	4,400	109	114	109
5,000–5,999	5,300	103	110	104
6,000–7,499	6,500	104	110	103
7,500–9,999	8,500	97	99	61
10,000 and over	14,000	110	122	48
All incomes	$ 5,200	107%	115%	678

*Mean income rounded to nearest hundred dollars.

$\alpha = 1$. If everyone had the same X per cent increase in income from one year to the next, we would expect to find $\beta = 1$ and $\alpha = 1 + X$. If, on the other hand, there is "regression" toward the mean, we would expect β to be less than 1. This would imply directly that the greater the income the smaller will be the percentage change in income from one year to the next. Fitting the above function by least squares procedures yields values for β of .71 for 1954-55 and .97 for 1955-56.[8] In other words, both slopes do turn out to be less than 1, though only the first is significantly so.

Age and Income Change

Turning now to the relationship of age to income variability (see Table 6A), the first thing we notice is that the frequency of income increases is highest for young people and declines throughout the age

[8] The correlation coefficients are .73 and .86, respectively.

TABLE 5

1955 Income	1955 Mean Income*	1954 Income / 1955 Income	1956 Income / 1955 Income	Number of Cases
Less than $1,000	$ 700	148%	135%	27
$ 1,000–1,999	1,500	120	122	52
2,000–2,999	2,400	109	138	56
3,000–3,999	3,500	106	115	99
4,000–4,999	4,500	100	110	102
5,000–5,999	5,400	93	107	113
6,000–7,499	6,600	93	105	101
7,500–9,999	8,500	90	102	72
10,000 and over	15,300	82	105	56
All incomes	$ 5,600	94%	108%	678

* Mean income rounded to nearest hundred dollars.

TABLE 6A

25 PER CENT INCOME CHANGES 1954–1955–1956 BY AGE GROUPS

Age*	Up†	Down‡	Same	Fluctuating§	Number of Cases
18–24	35%	4%	48%	13%	23
25–34	35	5	54	6	138
35–44	34	10	50	6	170
45–54	28	12	55	5	149
55–64	25	13	53	9	119
65 and over	25	20	43	12	67
All**	31%	10%	51%	8%	678

TABLE 6B

MEAN INCOME BY AGE GROUPS

Age	1954 Income††	1955 Income††	1956 Income††	Number of Cases
18–24	$4,800	$5,000	$5,600	23
25–34	5,300	5,700	6,300	138
35–44	6,000	6,400	7,000	170
45–54	5,800	6,200	6,400	149
55–64	4,500	4,900	5,400	119
65 and over	3,400	3,300	3,500	67
All**	$5,200	$5,600	$6,000	678

* Refers to age of the head of the household.
† Includes those whose income went Up-Up; Same-Up; Up-Same over the three years.
‡ Includes those whose income went Down-Down; Same-Down; Down-Same.
§ Includes those whose income went Up-Down; Down-Up.
** Includes twelve cases for whom age was not ascertained.
†† All mean incomes have been rounded to the nearest hundred dollars.

range considered, while the frequency of income decreases moves in exactly the opposite direction. When we examine the incidence of stable incomes, however, we find remarkably little relationship to age. The percentage of each age group having no big change over the three-year period ranges between 48 per cent and 54 per cent except for the oldest (over 65) group which drops to 43 per cent. It is generally thought that income stability increases with age. Past studies based on reported (remembered) income change show a strong tendency for older people to report stable incomes much more frequently than young people. However, results such as ours were also noted by Katona who found, comparing reinterview data with "recall" or "memory" data that "the increase in income stability with age was not supported because unreliability in reporting stable incomes, although about equally frequent at all age levels, is more pertinent to the oldest age group than to any other."[9]

[9] G. Katona and J. Fisher, "Income of Identical Consumer Units," *Studies in Income and Wealth*, Vol. 13 (1951), p. 103.

Although we did find, as expected, that old people are less likely to have income increases and more likely to have decreases, how can we explain their lack of income stability? The answer again lies in the level of income received, as this is strongly related to age (see Table 6B). This relationship is unimodal, with the highest incomes going to families in the 35-44 age bracket. Thus, young people start off with incomes below the average. They are more likely to go up, however, and less likely to go down than the rest of the population. The income peak seems typically to be reached somewhere in the early 40's, after which the likelihood of a decline mounts rapidly. At the upper end of the age distribution (65 and over), families fall into one of two groups: they have either low, stable incomes or high, fluctuating incomes; there are very few people in between. If they have steady incomes, they are pretty certain to be poor, and if they are poor, they are pretty certain to be stable. Incidentally, 50 per cent of the people over 65 are retired and another 25 per cent list their occupation as "housewife."

I might mention here another point on which the analysis has not yet been completed. This increase in income inequality with age holds true for each of the three years under consideration and also seems to increase over the three years. A further examination of this phenomenon is under way.

Education, Occupation, and Income Change

If we examine the relationship between income changes and education, we find that all education levels are equally likely to remain stable over the three-year period considered (see Table 7A). The only contrast which seems to appear is that between college graduates and those who did not go beyond grade school, with the former much more likely to have an income increase and much less likely to have a decrease. Looking at mean incomes, we see a strong correlation between educational attainment and income received (see Table 7B). However, even though we might expect higher income groups to decline and lower income groups to increase relatively as a result of the phenomenon of income regression, this does not seem to be the case here (see Table 7C). If anything, the less educated who start off at a low-income level seem to decline still further relative to the rest of the population over the three years considered here. In other words, while income regression or leveling may be expected to hold, *ceteris paribus*, this tendency in the population as a whole may be offset by other characteristics of individual households.

We notice a similar effect when we examine occupations (see Table 8).[10] The highest income group (self-employed and managerial) has

[10] The occupation classifications in the present paper refer to the occupation of the head of the household in 1954. Many people changed jobs over the three-year period, but such changes are not reflected in the categories shown in Table 8.

TABLE 7A

INCOME CHANGE AND EDUCATION

Education*	Up†	Down†	Same	Fluctuating†	Number of Cases
Grade school or none	27%	15%	51%	7%	241
Attended high school	34	7	50	9	135
Completed high school	30	10	52	8	154
Attended college	34	7	53	6	71
Completed college	37	7	50	6	70
All‡	31%	10%	51%	8%	678

TABLE 7B

Education*	1954 Mean Income§	1955 Mean Income§	1956 Mean Income§
Grade school or none	$3,900	$3,900	$4,100
Attended high school	4,500	4,900	5,500
Completed high school	5,700	5,800	6,500
Attended college	6,900	7,700	8,500
Completed college	8,500	9,900	10,200
All‡	$5,200	$5,600	$6,000

TABLE 7C

PER CENT OF MEAN INCOME

Education*	1954	1955	1956
Grade school or none	74%	70%	68%
Attended high school	86	87	91
Completed high school	110	104	108
Attended college	132	138	142
Completed college	162	177	170

* Refers to education of head of household.
† For explanation of these terms, cf. footnotes †, ‡, § of Table 6.
‡ Includes seven cases for whom education was not ascertained.
§ All mean incomes have been rounded to the nearest hundred dollars.

the greatest likelihood of an income increase and has the largest (both absolute and relative) increase in mean income. In fact, it is the only group to increase its share of income over the three years considered. Two groups (professional and unskilled) held their own, and the rest declined relative to the sample as a whole. Probably the most striking aspect of Table 8 is the picture it gives of retired households. These have an extremely low mean income and decline relative to the sample as a whole over the three years considered. Notice, however, that this does not seem to be caused by their receiving a fixed income while income for the population as a whole was increasing, for retired households were less likely to receive stable incomes than any other occupation group. Rather, it seems to reflect the fact that their declines were more frequent and probably larger as well.

TABLE 8A

INCOME CHANGE AND OCCUPATION

Occupation*	Up†	Down†	Same	Fluctuating†	Number of Cases
Self-employed and managerial	38%	11%	42%	9%	97
Professional and technical	25	6	60	9	68
Clerical and sales	23	6	68	3	82
Skilled and semiskilled	29	9	54	8	245
Unskilled	36	13	47	4	87
Retired	26	21	40	13	38
All‡	31%	10%	51%	8%	678

TABLE 8B

Occupation*	1954 Mean Income§	1955 Mean Income§	1956 Mean Income§
Self-employed and managerial	$8,100	$9,100	$10,200
Professional and technical	7,000	7,700	8,100
Clerical and sales	5,600	5,900	6,200
Skilled and semiskilled	5,000	5,200	5,500
Unskilled	3,800	4,200	4,400
Retired	2,400	2,200	2,400

TABLE 8C

PER CENT OF MEAN INCOME

Occupation*	1954	1955	1956
Self-employed and managerial	155%	163%	170%
Professional and technical	134	137	135
Clerical and sales	108	106	103
Skilled and semiskilled	97	94	92
Unskilled	74	76	74
Retired	47	40	39

* Refers to occupation of head of household (see footnote 10).
† For explanation of these terms, cf. footnotes †, ‡, § of Table 6.
‡ Includes sixty-one cases of other occupations or occupation not ascertained.
§ All mean incomes have been rounded to the nearest hundred dollars.

Summary

To summarize our observations, we have found that the sample as a whole tends to "regress" toward the sample mean income from one year to the next. Certain characteristics of households seem to counteract this regression, however; some groups even seem to move away from the sample mean over time.

How, then, can we explain these phenomena? Is there some sort of an "invisible hand" inexorably pulling people toward the mean income? Rather I would suggest a model of the following form: Let us hypothesize that each individual belongs to a group, this group being deter-

mined by certain of his characteristics—his age, education, geographical location, etc. In any given year, the members of each group have a mean income and a dispersion about this mean, and each individual member has an income which is determined by a random drawing from this distribution. Under such a model, we would expect to observe year-to-year regression toward the mean of the individual's group. For example, if we observe a laborer whose income is above the mean for laborers, yet below the sample mean, we would expect him to be more likely to decline than rise in income—and in fact preliminary investigations seem to bear this out. We would also expect that the slopes obtained by plotting incomes from successive years would be smaller for more homogeneous groups, and again preliminary investigations seem to indicate that this is the case in our sample.

It was noted above that for certain groups the group means actually seemed to diverge over time from the mean for the sample as a whole. Is this compatible with regression toward group means and over-all regression toward the sample mean? The answer is yes, as long as the variances of the group income distributions are not too small relative to their means. If we consider an individual whom we observe to have an income slightly below the sample mean in a particular year, it is possible that his education, age, etc., are such that we would expect him to be even lower the following year. Yet it is also possible that he actually comes from a higher income group and is just temporarily down. Thus, unless the incomes of different groups are diverging at a rapid rate over time, we would expect, examining year-to-year incomes and ignoring other characteristics, to observe that the sample as a whole tends to regress toward the over-all mean.

This model is offered merely as a tentative explanation of the observed phenomena. Whether or not it is correct and whether or not the identification of the homogeneous groups it assumes is feasible, certain things seem clear. Income distributions based on income for only one year can give a distorted picture of the income distribution, exaggerating the degree of inequality in the population. Not only are people in low-income brackets more likely to have suffered a decline,[11] but they are also more likely to increase their income the following year (and by a larger percentage amount) than are families higher in the income distribution. The use of family income for a particular year as an explanatory variable in econometric investigations of cross-section studies may very well give misleading results. First, to the extent that habits are important, there will be more people at low incomes than at high who are accustomed to an income level above their present one. Second,

[11] Such an observation would still be compatible with the statement that income increases and declines are equally likely to occur at all income levels.

to the extent that future income changes are anticipated correctly, more people at low incomes than at high will be looking forward to a "brighter tomorrow" and adjust their behavior accordingly.

This paper has reported on a preliminary examination of these data concerning income variability. There exist, of course, strong correlations between many characteristics of households, such as education and occupation. Further investigations will be necessary in order to measure the effects of interactions among these different characteristics and their relationship to income variability. Only by getting a clearer picture of the behavior of identical consumer units over time can we select relevant variables for studying such areas of concern as income inequality and consumer expenditure patterns.

CHANGES IN CONCEPTS OF INCOME ADEQUACY OVER THE LAST CENTURY

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A century ago, Theodore Parker observed that "as society advances, the standard of poverty rises."[1] In his Economic Report in 1956, President Eisenhower said that "too many families and individuals still have to get along on incomes that are inadequate by American standards." He continued by saying that "the situation keeps changing."

Changes in concepts of income adequacy over the last century were inevitable, considering the changes that occurred in the many factors which influence these concepts. There have been changes in the nature, distribution, and level of income; in the composition of families and in their place and manner of living; in the scientific knowledge and productive power of the nation; and in social, economic, and political relationships. All of these have caused changes in our standards of living and consequently in our concepts of income adequacy.

This paper has been limited to a review of the period from the mid-nineteenth to the mid-twentieth century in the United States, though it should be recognized that American social and economic concepts often reflected those prevailing in Europe, particularly in the closing years of the nineteenth century. The past century has been divided into three broad periods—1860 to 1900, 1900 to 1935, and 1935 to date—which roughly coincide with the shifts in emphasis in empirical studies of income adequacy.

The Situation in the Mid-Nineteenth Century

As has often been pointed out, the year 1860 was an important "terminal point" in one phase of American political, social, and economic history.[2] The country had a prosperous, growing economy, with 80 per cent of the population in rural areas and only about 10 per cent in cities of 50,000 or more persons.

In Europe, social and political unrest resulting largely from industrialization and living conditions in cities had already led to studies of the income and expenditures of different classes and attempts to relate the findings of these investigations to the general social, eco-

[1] Theodore Parker, *Critical and Miscellaneous Writings—Thoughts on Labor.*
[2] For a comprehensive discussion of the consumption levels of this period see Edgar W. Martin, *The Standard of Living in 1860* (University of Chicago Press, 1942).

nomic, and political situation. In the 1790's in England, David Davies, as the result of his studies of "labourers in husbandry," recommended a minimum-wage law, and Eden focused attention on the plight of the poor among both agricultural and nonagricultural workers by publishing *The State of the Poor*.[3]

On the Continent, Frederic Le Play by 1855 had made studies which emphasized the relationship of the individual to the family and the family to society, and stressed the importance of the family's material well-being in these relationships. He "tried to show that fundamental prosperity is associated not only with a well-developed material standard of living but with a social system organized to preserve this standard of living."[4] This idea has had considerable influence in shaping American concepts of income adequacy although his methods of analysis were eclipsed by those of Ernst Engel and others.

In the mid-nineteenth century, families in established eastern areas of the United States were a fairly good example of Le Play's "stem families" which he associated with prosperous, complex (agricultural and industrial) societies. These families provided the security for those who undertook new ventures—developing new industries or migrating to the city or to the West.

The problem of caring for those unable to care for themselves was considered a family or local community problem. Ideas for public poor relief were generally comparable to English practices. To quote one author:

> The poorhouses were used to care for all kinds of dependents—the sick and infirm, the aged, orphans, drunkards, lunatics, ne'er-do-wells—and had a well-earned reputation for allowing inmates the absolute minimum of the necessities of life. Pauper children were, if possible, apprenticed, and in some states able-bodied adults, if shiftless, were also bound out.[5]

There appears to have been relatively little thinking on the general question of income adequacy. Daniel Raymond in 1820 advanced the idea that the relation of consumption to production had an important bearing on national prosperity. John Rae differentiated between "necessities" and "luxuries," attributing increased consumption to vanity. H. C. Carey, in his *Principles of Political Economy* in 1837, considering wages and the condition of the laboring classes, expressed the idea that "man desires to maintain and improve his condition."[6]

[3] A tabular summary of Eden's budget information is given by George J. Stigler in "The Early History of Empirical Studies of Consumer Behavior," *J.P.E.*, Apr., 1954. See, also, Dorothy S. Brady, "Family Budgets: A Historical Survey," *Monthly Labor Rev.*, Feb., 1948.

[4] Carle C. Zimmerman and Merle E. Frampton, *Family and Society* (D. Van Nostrand Co., 1935), p. 99.

[5] Martin, *op. cit.*, pp. 287-291. A bibliography of historical studies of public welfare activities may be found here also.

[6] Carle C. Zimmerman, *Consumption and Standards of Living* (D. Van Nostrand Co., 1936), pp. 460-463. Chap. XV gives a summary of European studies made before those mentioned in this paper.

Probably the first indication of the federal government's concern with the question is the request by the Senate in May, 1836, asking the heads of the executive departments to report "their respective opinions upon the justice and propriety of increasing the compensation of all or any of the clerks in their respective departments." The household accounts of a Treasury clerk were submitted in support of the measure.[7]

From 1860 to 1900—The "Subsistence" or "Break-Even" Concept

The rapid and continuous changes in the economy that followed the Civil War focused attention on the conditions of all types of poor in the population. Industrialization, the growth of cities, and new waves of immigration had changed the definition of "the poor" to include many city workers as well as the old, the young, and the unemployable. By 1900, 40 per cent of the population lived in urban places. The greatest increase had been in the large cities, where expanding industries attracted immigrants, many of whom were not equipped for city life and work. Homegrown food, free fuel, and other nonmoney income of various kinds available to workers in rural areas and small communities were not available to these new city families. The cost of living became an important problem from many different points of view.

Economic theories of consumption tended to be those prevailing in Europe, transplanted in American soil. Economists and industrialists, struggling with the problems of production and capital formation, accepted in part the subsistence, wage-fund, and similar theories of wages. They rejected the pessimistic conclusions of such theories—that real wages were inevitably fixed by "natural laws"—and clung to the idea that somehow, and for some reason, all should (or would) share in the increased productivity of American industry and agriculture. Nevertheless, since they considered the cost of living as a factor in production, they subscribed to a subsistence concept of income adequacy. There was, however, a fairly wide range in the definition of subsistence. Generally, it meant the minimum required to provide the "necessaries of life"—food, shelter, and clothing.

The period was marked by the growth of welfare institutions of all kinds, private and public. Social scientists, struggling with the problems of caring for the poor and wanting to improve living conditions in the slums of large cities, tried to determine the cost of living for all types of poor. They, too, were usually willing to settle for some subsistence concept of income adequacy—an income which would enable families to break even with their income and expenditures for physical needs, without having to resort to charity.

[7] Faith M. Williams and Carle C. Zimmerman, *Studies of Family Living in the United States and Other Countries* (U. S. Dept. of Agric., Misc. Pub. No. 223, Dec., 1935), p. 199. This report provides a comprehensive bibliography of income and expenditure studies made up to the time of its publication.

Empirical analysts, following the methods of Ernst Engel, made many studies of family income, expenditures, and savings. It has been pointed out that the preoccupation of these economists, particularly Carroll D. Wright, with the search for stable laws of consumption diverted them from analyses which might have speeded up the development of an income theory and more precise definitions of the concepts of income adequacy.[8] This work dealing with the laws of consumption, however, did lead to the recognition of different concepts of adequacy for families of different size and composition. Also it pointed up the fallacy of using dollar expenditures to measure the cost of any specific standard of living at different times and in different places.

New scientific knowledge of nutritional needs provided the first objective standards for minimum food requirements for families of different age and composition. Sanitary standards for housing, developed in an effort to control the health hazards in city slums, were soon adapted for use in budget standards.

By 1900, analysts were defining subsistence, not in terms of actual expenditures at minimum levels, but as the cost of adequate food, housing, and clothing to maintain a minimum standard of health and decency. They were beginning to point out the importance of allowances for other goods and services which satisfied psychological rather than physical needs.

From 1900 to 1935—The "Living-Wage" Concept

The first decade of the century was marked by health and labor legislation and agitation for social reforms of many kinds. The federal government collected vast quantities of data on income, expenditures, savings, and living conditions of workers and others, especially those who were, or were apt to become, public charges. Similar data were collected by state and local governments and by private groups of many kinds.

Frank Streightoff in the Report of the Factory Investigating Commission of New York State in 1915 said:

> The duty of inquiring into the desirability of a minimum wage law has made necessary this investigation into the cost of living. The wage statistics . . . impressively reveal the fact that large numbers of employees in New York State are receiving very low pay. But that is only one side of the story; "How many of these men and women receive enough for a decent livelihood?" is the vital question. Obviously this question cannot be settled without definite knowledge of what a decent livelihood costs. . . . The purpose of this inquiry, then, is to determine as definitely as possible, the amount of money necessary for life in simple decency and efficiency.[9]

[8] For a discussion of this point see, Dorothy S. Brady, "Scales of Living and Wage Earners' Budgets," *Annals of the Amer. Acad. of Polit. and Soc. Sci.*, Mar., 1951, pp. 32-38. George Stigler has observed that empirical analysis of income developed "fully seventy years before income became an important variable in the formal theory." *Op. cit.*, p. 95.

[9] Frank Hatch Streightoff, *Fourth Report of the Factory Investigating Commission* (1915, State of New York, Report on the Cost of Living), Appendix VII, p. 1465.

Streightoff estimated minimum living costs on the basis of the minimum income at which the families studied had achieved adequate diets and sanitary housing. Similar statements and studies are found in various records of industry, trade-unions, and government.

Research studies in England at the turn of the century provided inspiration for the development of budgets which defined the quantities of goods and services necessary to provide specified levels of living. The U.S. Bureau of Labor in 1909 prepared quantity budgets describing two standards: a "minimum standard" which met minimum physical needs and a "fair standard" which provided for "the development and satisfaction of human attributes." Nothing was included "other than what some families have already attained and all families are striving to attain." Many organizations accepted these quantity budget standards and priced them. The standards of living described by these budgets and the reactions to estimates of their costs provide our best clues to the prevailing concepts of income adequacy.[10]

There was general agreement that incomes should be adequate to provide, in addition to the food, housing, and clothing necessary for health and decency, some allowance for "comfort," but even discerning economists did not foresee the dimensions that would be given to comfort by future technological development and merchandising, supported by increased real income and new credit facilities. In the *American Economic Review* in June, 1912, Wesley C. Mitchell wrote on "The Backward Art of Spending Money," explaining why the art of spending would probably always lag behind the art of making money. He contended that "the equipment which can be employed economically in the household falls into the class of inexpensive utensils and hand tools; even in this age of steam and electricity, a family must be cared for by hand."

Rapidly changing prices, especially during World War I, advanced the idea that concepts of income adequacy must deal with real income. Long-run as opposed to short-run needs in various situations of unemployment, sickness, and disability were also recognized. Throughout the period, as earlier, concepts of income adequacy for self-sustaining families were more generous than those associated with assistance programs, both private and public. There was at least one private agency, however, which stated its allowances compared favorably with a widely accepted "health and decency" standard.[11] However, critics of the Bureau of Labor Statistics budget, issued in 1920, objected to the consideration of decency in the budget standard.

[10] The exhibits prepared for the Louisiana Purchase Exhibit and published in *U. S. Bureau of Labor Bulletin No. 54*, Sept., 1904, are a good illustration of the variety and detail of these investigations.

[11] Issac Max Rubinow, "Relief Budgets and Standards of Living," *Jewish Soc. Serv. Quar.*, Feb., 1924.

By 1920, there was general acceptance of the principle of the living wage but little agreement on what constituted it or how it should be measured. A summary of the various budgets made up to 1923 showed the range in their estimated current costs, classified by the standards they described, to be:[12]

	Five-Person Family
The poverty level	$1,000 to $1,100
Minimum of subsistence	1,100 to 1,400
Minimum health and decency	1,500 to 1,700
Comfort	$2,100

After World War I, the idea of increased spending as a means of increasing prosperity was given formal recognition. The January, 1920, issue of the *Annals of the American Academy of Political and Social Science* was devoted to discussions of "the new American thrift." The theme was that Americans were "less concerned about saving per se—but more concerned about conservation and proper utilization as a means to greater service, greater welfare and greater happiness." The September, 1924, issue was devoted to the science of distribution or "modern selling," pointing out the "interdependence of modern specialized industry"; contending that the "health and prosperity of a community is determined by the ability of the individual to take his part in the economic structure of his day"; and observing that "as business becomes larger—the distributive process is becoming increasingly conscious of the necessity of interpreting the uses of economic goods in relation to the evolving health necessities of the individual, family, group, and community."

Thus emerged the "social" concept of income adequacy.[13] It was eclipsed by the urgent problems of welfare administration in the early thirties. Standard budgets of that decade were based on "emergency" and "maintenance of health and decency" concepts. However, the new theories which stressed the importance of income and consumption to the economic health of the nation soon brought a revival of the social concept of income adequacy.

From 1935 to Date—The "Social" Concept

Since the mid-thirties, with consumption playing a leading role in economic theory, the social concept of income adequacy has become increasingly more important and more generally accepted. It has also

[12] Douglas, Hitchcock and Atkins, *The Worker in Modern Economic Society* (University of Chicago Press, 1926), pp. 272-287.

[13] For a discussion of wage concepts and a case study in support of the "social wage," see Morris E. Leeds and C. Canby Balderston, *Wages—A Means of Testing Their Adequacy* (University of Pennsylvania Press, 1931).

become more complex and less susceptible of precise definition. However, successful accomplishment of numerous activities in our economy depends on well-defined concepts of adequate living standards. Budget standards are needed to evaluate the adequacy of income of self-supporting families, as well as needs for community assistance of various kinds. Estimates of need obtained from such standards provide the basis for broad legislative, economic, and social programs. The ability of families and individuals to assume responsibility for dependent relatives and eligibility for special assistance of various kinds, such as medical and educational grants, are judged on these budget standards. Standards at different conceptual levels of adequacy have been developed to serve these purposes.

Most of the postwar budget standards, prepared for self-supporting families, describe a level of living which meets the necessary minimum "as determined by prevailing standards of what is needed for health, efficiency, nurture of children, social participation, and the maintenance of self-respect and the respect of others."[14] Improved scientific knowledge of health and nutrition has provided the basis for widely accepted minimum standards for food and housing. Progress is being made in the development of standards for medical care. Improved statistical techniques and a wealth of data on expenditures of families of various types have made possible more objective determination of other items which must be included in the family budget at specified levels of living.

The importance of defining the concept of conformity with "prevailing standards" in selecting goods and services for inclusion in budgets is revealed by postwar budget studies. Postwar increases in productivity, the resulting rise in the levels of income and consumption achieved by a majority of the population, and the availability of a wide variety of new goods and services that have stimulated demand have raised Americans' ideas of how they ought to live; i.e., their standards of living.[15] These higher standards are reflected in the levels described by the postwar budgets. Appropriate price data are not available to make precise comparisons, but postwar costs of "modest but adequate" budgets for self-supporting families, roughly deflated for price change, range from about 30 to 60 per cent higher than the "minimum comfort" budgets of the early twenties.

The widespread changes in our manner of living and the way we finance it pose difficult questions in the derivation of satisfactory budget concepts for the variety of purposes for which they are used.

[14] *Workers' Budgets in the United States* (Bur. of Labor Statistics Bul. No. 927), p. 6.
[15] Faith M. Williams, "Standards and Levels of Living of City-Worker Families," *Monthly Labor Rev.*, Sept., 1956.

The shift to homeownership, suburban living, increased employment of women outside the home, new standards for health, and many other things have changed the values attached to different goods and services and the way we use our current incomes. The various programs adopted to insure income, such as minimum wage laws, unemployment compensation, Old Age and Survivors' Insurance, public and private health and welfare funds, etc., and changes in our ideas of the relative responsibilities of individuals and government for the care of the needy have affected our attitudes on the relative merits of spending and saving and our concepts of the adequacy of current income in different situations.

Administrators of assistance programs of various kinds, faced with the difficulty of differentiating between long-term and short-term needs, usually modify budget standards developed for self-supporting families to care for the needs of dependent families. In situations of long-term need, such as aid to dependent children, standards usually subscribe to the concept of provision for "social participation." In situations of short-term need, the tendency is to revert to a concept of minimum expenditures required to carry the recipient over the period of emergency without an objective appraisal of the adequacy of living standards.

The objectives of many of these programs illustrate the increased complexity of the problem of evaluating income adequacy. For example, it has been stated that the objective of unemployment insurance is "to preserve the previous standards of living of each individual claimant insofar as this is practicable," and at the same time, the benefits should "help maintain community purchasing power, provide a brake on recession, and help sustain business confidence and the general level of economic activity."[16] Such objectives involve appraisal, not only of the individual's needs, but also evaluation of those needs in relation to the needs of the economy. Historically, evaluation of benefit levels in state unemployment insurance programs has been made in terms of prevailing wages, instead of standard budget criteria. With a prevailing wage concept, the needs of the individual may be obscured, and allowances may fall far short of meeting the cost of goods and services which have come to be "necessities" to skilled workers.

The complexity of the social concept of income adequacy is also shown by the Twentieth Century Fund study of America's needs and resources which undertook the formidable task of estimating the additional needs of families and individuals living at "substandard" levels,

[16] Philip Booth, "Recent Studies of Adequacy of Unemployment Insurance Benefits," Annual Meeting of Amer. Statis. Asso., New York City, Dec. 27, 1955.

and also "the costs of supplying additional government services to provide satisfactory community living standards for the entire population."

As in the past, the general concepts of income adequacy are not being challenged. What is usually challenged is the ability to express these concepts in quantitative measures and, therefore, the estimates of needs based upon them. Estimating the needs of individuals and families requires a comparison of their income in relation to the cost of a specified standard of living. Extensive theoretical and empirical studies are being made to redefine income as it affects current spending. These studies point out the possibility of differential effects of transitory as opposed to permanent income on family living standards.[17] The effect on spending of other resources such as inventories of durable goods, credit facilities, past and future income status, etc., are also being investigated. Estimates of need for particular groups in the population have been substantially lowered when needs have been measured in relation to total resources rather than on the basis of current money income.[18]

This research should lead to a re-evaluation of the methods used in the development of budget standards and the selection of the goods and services included in budgets designed to meet specified standards. There is danger, however, that the emphasis on finding the right definition of income will obscure the fact that determining the adequacy of that income depends on the availability of objectively determined budgets which describe adequate levels of living at current costs.

It is fair to say that incomes in the past two decades have been more adequate than ever before to meet needs, and that provisions for the needy are also more adequate. However, it is also fair to ask whether present-day provisions represent the maximum that can be provided by our economy and whether adequate research is under way to measure need and make provision for the future. Our experience over the last century shows that past goals have become present realities.

[17] See Milton Friedman, *A Theory of the Consumption Function* (NBER); Irwin Friend and Irving B. Kravis, "Consumption Patterns and Permanent Income," *A.E.A. Papers and Proceedings*, May, 1957.

[18] Eleanor M. Snyder, "Measurement of the Size of the Urban Population with Chronic Low Income Status," 1957 Annual Meeting of the Amer. Statis. Asso., Sept. 10, 1957.

DISCUSSION

FRANK W. NOTESTEIN: Dr. Brady's paper raises a number of important problems concerning the familial sharing of income and the conditions under which it takes the form of remittances to relatives living separately or that of the direct sharing of living quarters. She shows that we need to know a great deal more about the position of individuals in the system of relationships in order to understand the structure of consumer units and, indeed, to understand many aspects of economic behavior. It is particularly important, she notes, to discover more about both the stability and the pattern of change in family ties in order to interpret historical trends in consumer behavior.

With respect to the sharing of income among relatives the argument appears to be:

1. The individual family head feels primary responsibility for the maintenance in one consumer unit of the nuclear family consisting of the spouse and young offspring. The claims for assistance of other relatives such as adult children and parents tend to be met, if at all, by sharing income rather than living space when it is financially possible to do so.

2. The cost of supporting a person tends to decrease with the size of the household so that the most economical way of supporting relatives is by sharing living space.

3. The distribution of assistance between cash aid in the maintenance of a separate household and the sharing of living quarters with the nuclear family is a resultant of the need for economy, on the one hand, and the desire to restrict common living to the nuclear family, on the other. Dependency problems, therefore, tend to be resolved by shared living in low-income situations and by cash remittances in support of separate households when the income is more than average.

It is clear that the distribution between shared living and remittances varies with the state of the economy and with its secular changes. For individual families, it also varies with the respective ages of the head and the dependent relatives.

These propositions—and many others in the paper, including the schematic arrangements of shared and separate living by parents and adult children—are sensible and probably true. I should point out, however, that they cannot be derived from or checked by the evidence put forward in this paper. Dr. Brady appears to have drawn upon a considerable body of evidence that she has not shared with the reader.

One final matter: Dr. Brady concludes that some of the empirical constants of economics may be simply demographic facts. Undoubtedly the proposition contains a measure of truth, but at best the situation is extremely complicated. The demographic facts, the institutional provisions for the support of non-earners, and the bases on which one individual can successfully claim support

from another all differ enormously from society to society and from class to class in the same society. In our own society they have been changing very rapidly in recent years.

Only a few illustrations are needed. The claims of orphaned children of relatives or friends have been greatly reduced by the spectacular drop of death rates, the increasing vogue of life insurance, and the growing scope of social insurance for widows and orphans. These gains have been considerably canceled by the rising prevalence of separation and divorce, too often unaccompanied by adequate provisions for the financial support of dependents. The spatial separation of adult children from their parents in our highly mobile society and the growing prevalence of pensions and old age insurance must have considerably weakened the claims of aged parents to join the households of their children.

On the other hand, the sharp decline of the age at marriage and the rise of the birth rate since the war apparently has meant that, at least in the higher income groups, parents are helping more than ever with the support of their married children. Certainly the increasing vogue of higher education has greatly extended the period of youth dependency. It is just possible, too, that in times of stringency the trend to the suburbs may again stimulate more shared living, which apartment dwelling considerably discouraged. Finally we may note that both dependency relations and the age structure of earnings are at present conditioned by the fact that persons of working age are increasing rather slowly, whereas persons over age 65 and persons under age 20 represent the most rapidly growing sectors of the population. In a decade or so, when the huge numbers of children born during the postwar years move into the working ages, the situation both as to needs and responsibilities may shift rapidly.

In the face of complexities such as these, I remain highly skeptical that any reasonably simple set of assumptions will be sufficient to permit us to trace from indirect evidence the main lines along which income and living facilities are shared. The answers to the extremely important problems posed by Dr. Brady will come, I suspect, only from direct evidence that connects individual incomes with living facilities and cash remittances.

Although my main assignment was to discuss Dr. Brady's paper, I cannot resist saying a word about the others.

Bristol's excellent study speaks for itself. He is correct in pointing out that the income of each relatively homogeneous group will experience a regression to the mean from one year to the next. It is bound to do so as long as the distribution contains any random element. Random elements will be found as long as people get sick, become unemployed, change jobs, receive windfalls, and buy and sell property. The fact that any given year is an exceptional one for a significant proportion of the population, and that it is recognized as such by those involved, must certainly be taken into account in any analysis of behavior based on data relating to a particular year. My only worry is that in our preoccupation with the need for introducing corrections for the abnormal we overlook the fact of its existence. The gains and losses of income that are unusual for the individual family in any given year are, nevertheless, the

normal annual occurrence for a significant proportion of every group in the population.

Mrs. Lamale's interesting account of the changing concept of income adequacy is a heart-warming story of the way in which provision for the needy has outrun our former concepts of need. I would quarrel with only part of one sentence in a lucid and useful account. She says that "it is also fair to ask whether present-day provisions [for the needy] represent the maximum that can be provided by our economy. . . ." Some support can doubtless be found for almost a limitless number of criteria of adequacy of assistance for the needy. Among them that of "the maximum the economy can provide" must stand toward the limit of generosity. Probably most people would also feel that it exceeds the bounds of wisdom.

MEREDITH B. GIVENS: Each of the papers today reflects important changes which are taking place in the concepts needed in the measurement and evaluation of income and the composition of consumer units.

Underlying this discussion is the fact that the economic status of individuals and families—the level of their participation in the national economic life—is not revealed by discrete static sets of annually recorded data or by series of such data. Consumer behavior in general does not respond quickly to short-term changes in income. Spending habits are more stable than jobs—increasingly so as with the wide availability of consumer credit and the wider scope of income maintenance programs.

Yet it is economic status over a period of time, not earnings or income for a single year, which controls consumer levels and manner of living. Economic status, in turn, is affected by the changing structure and needs of the family and economic household and by the shifting pattern of incomes within consuming units over time. Close examination of the family sharing of incomes is therefore necessary in studying the dynamics of income and expenditures of both individuals and families.

Information on the composition of consumer units in relation to the incomes of their members is essential in gauging the level of living and the adequacy of incomes. The criteria of adequacy will shift with the phases of the family life cycle, as youth asumes the economic responsibilities of maturity, as the incomes of older persons reflect the individual or social vesting of earlier incomes (or the lack thereof), as social habits and institutional arrangements affect the extent of dependency, and as lifetime economic patterns are affected by the growing social responsibilities of the modern community.

The study of demographic factors and family composition in relation to income, as reported on by Dr. Brady, will be especially useful in predicting trends in needs and satisfactions among various economic groups in our population and in providing guide lines for social programs. The projection of demographic trends can be reliable for longer periods than economic forecasts. Such factors as age, sex, family organization, education, labor force participation, and dependency are among the key elements to be taken into account in considering the means for improving the self-support, productivity, and level of living of our population.

There are special difficulties in developing data which are properly suited to the study of income adequacy and levels of living. Dr. Brady's approach undertakes a systematic dissection of blocks of information for population groups with different characteristics, representing differing stages in the cycle of family living. Information for constant samples of individuals and households for consecutive periods of time is hard to obtain. It is fortunate, therefore, that the Michigan study has obtained data from reinterviews with the same panel members at four successive points in time. Whatever the limitations of scope and coverage in this survey, the findings are suggestive. While observing the general tendency of the data to move toward the sample mean income at successive periods, Dr. Bristol has undertaken to group income recipients according to variables which are related to income levels. By this means he identifies such significant relationships as the association of low educational attainment with low incomes, and observes that incomes already low tend to deteriorate when compounded with inadequate schooling, whereas they tend to move upward in direct proportion to the adequacy of the educational base. The practical implications of such conclusions are important. We may hope that collection of this kind of data will continue.

Mrs. Lamale has helpfully traced the progression of prevailing ideas and criteria of income adequacy, describing the early notions of minimum requirements for subsistence, the later and continuing quest for objective standards in physical terms, and the more recent emphasis on budgetary standards measured in monetary terms. Hitherto the concept of income adequacy has been something of a will-o'-the-wisp, from a scientific viewpoint, involving value judgments which are not susceptible to statistical treatment. Notions of adequacy and inadequacy have been used as slogans in collective bargaining arguments and social legislation. In these settings the meaning of adequacy is hard to pin down, except to say that "adequacy means more." Parallel to these ambiguities are the difficulties which are faced in the administration of standards of need, which vary widely in both the public and private welfare fields.

The problem of identifying the dividing line between adequate and inadequate income is not a simple one. People's standards and opinions of sufficient or necessary income vary considerably. In an analysis of 1949 income data for New York State, obtained from the 1950 census, Daniel Creamer, in a study for our New York State Interdepartmental Committee on Low Incomes, has applied a budget which was prepared by the Community Council of Greater New York, scaled by size of family, distinguishing families with heads over 64 years of age from other families, and allowing for the lower cash income needs of families in rural areas. Applying this yardstick to the 1950 census data, after extensive revisions for qualitative and conceptual deficiencies, it was found that almost one million families and more than one-half million unrelated individuals in New York State had incomes below the level as thus determined in 1949. That is, 26 per cent of all families and 42 per cent of all unrelated individuals had "low" incomes, thus defined. In over-all terms, it is estimated that about 30 per cent of the state's population were in family units with low incomes.

The most appropriate choice of definition of the consuming unit and the family unit is important in this field of inquiry. The economic household, defined in terms of the dwelling unit, is the conventional unit for census and other survey purposes.

Mrs. Brady's analysis points up a very important factor for any analysis of the low-income population, and that is, how the basic family unit is defined. Using the standard census definition—all related persons in the same dwelling unit—a study conducted by Miss Eleanor M. Snyder for the Franklin D. Roosevelt Foundation estimated that in 1950, 6.4 million urban families and unrelated individuals had permanent low-income status. But the same study shows that if a nuclear family concept is adopted (this definition counts separately each family in a doubled-up unit) the total of substandard units is raised to 8.5 million. Obviously, distributions by income will vary with changes in the composition of the basic sampling unit.

Mrs. Brady's hypothesis about the combinations of individuals in consumer units as functions of their incomes is broadly substantiated by the findings of the Snyder study. It was found that only in 14 per cent of all urban doubled-up consumer units the joint living arrangements were not due to economic necessity; that is, every family had sufficient income to enable them to live alone had they so desired. On the other hand, 78 per cent of the individuals and 42 per cent of the families had incomes below budgetary requirements. It would be of considerable interest if Mrs. Brady's model were to be applied to the cross-section data analyzed in this study, as well as to other sources of demographic information.

I believe it is very important to develop more information on the histories of individuals, historical economic data for family units, and more demographic and economic data on individuals and families in connection with the administrative record keeping of our large going social programs. Such data are needed if we are to evaluate adequately the meaning of these programs and their full impact on the affected groups in our population. By the study of such data we will be better able to seek clues to causation and devise more promising programs for prevention of socioeconomic deterioration and distress.

STATE AND LOCAL PUBLIC FINANCE

THE ROLE OF MAJOR METROPOLITAN CENTERS IN STATE AND LOCAL FINANCE

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I

The "major metropolitan center" may be defined in a variety of ways. For the purpose at hand, I have arbitrarily selected the seventeen core cities of standard metropolitan areas whose populations in 1950 exceeded 500,000, excluding Washington, D.C., because of the absence of an overlying state government. The population of the smallest of these cities exceeds that of four of the states. They are large enough to permit the enjoyment of whatever economies of scale may be associated with the provision of municipal services and to warrant the employment of top-level public management personnel and the most efficient techniques and equipment. Relative to them, the states in which they are located enjoy few, if any, inherent advantages in revenue or expenditure administration that are traceable merely to the scale of activities. These cities constitute the core cities of the states' largest or second largest metropolitan complexes, their principal centers of industrial, commercial, financial, and service activity and their major seats of wealth and sources of revenue.

There is ample evidence that the larger central cities are continuing to grow—in population and in business activity. But their function is changing and will continue to change at an increasing rate. Standardized processes, particularly in manufacturing requiring the use of plants designed for automated horizontal movement of parts and materials, may be expected to be located to an increasing extent outside of the central city. The latter, on the other hand, will continue and expand in importance as the center for those activities that cannot be routinized, activities that require ready access to the specialist and to professional gossip, and easy interpersonal contact. Thus, while many assembly lines move out, executive offices and showrooms are likely to stay. In addition, the central city will remain the locale of vast numbers of smaller industrial plants which will continue to require a central location because of their need to purchase units of input which they cannot economically obtain internally. The large central cities, too, must remain the hubs of activities in the arts and in culture generally.

That population in the major metropolitan centers is likely to continue to increase seems probable on at least two counts. The first of these is the fact that suburban communities notoriously resist invasion by nonwhites and certainly few or none zone for low-income families. The central city, consequently, is the residual heir to such groups and will be likely to continue to absorb them in numbers that will ensure population growth. The second factor tending to increase the population of the central cities may be seen in the likelihood that heads of families who sought space and a garden in the suburbs may return to the city when the children are grown and the garden becomes, with advancing age, only a series of difficult chores.

My principal objectives in this paper are to point up, against this background, the reasons for expecting that our major metropolitan centers will experience growing discrepancies between fiscal needs and resources, that the property tax neither can nor should be called upon to fill the gap, and that major reliance must be placed upon local nonproperty revenue sources.

II

The economic and demographic changes taking place in and around the major metropolitan centers of the nation are bound to have important fiscal repercussions. In per capita terms, expenditure requirements seem certain to increase, both absolutely and relative to those in smaller cities and in the satellite communities. On the other hand, the property tax base, per capita, will be likely to decline, while state aid distributed on the basis of population will increasingly fail to reflect relative needs and obligations.

The per capita expenditures of the major metropolitan center may be expected to increase as a consequence of the fact that the generation of demand for public services in such centers is, in important degree, a function of the number of persons living in the surrounding metropolitan area. While it is hazardous to venture prognoses on the basis of cross-section analysis for any one year, my own statistical analysis and that conducted earlier by Professor Hawley[1] confirm the hypothesis that the per capita outlays of the central city are associated with the size of the population resident in the metropolitan area outside of the central city. Persons living in suburban communities who work, play, or shop in the central city add to the need for street and parking facilities and traffic control and add as well to the demands upon the city's facilities in such areas as police and fire protection, recreation, and sanitation. Population size of the central city itself, on the other hand, does not appear to influence the level of per capita expenditures. Given

[1] Amos H. Hawley, "Metropolitan Population and Municipal Government Expenditures in Central Cities," *J. of Soc. Issues*, 1951, pp. 100-108.

the certainty, therefore, in the absence of substantial annexations, that the ratios of metropolitan area population to core city population will continue to increase rapidly, it follows that the expenditure requirements of the core cities or major metropolitan centers will increase substantially more rapidly than would be indicated by increases in their own populations and rising levels or standards of public service.

If the function of the central city is changing and is to continue to change in the directions suggested by economic and social developments, its expenditure levels and patterns will change as well if the role of the municipality in the provision of public services is to conform with and facilitate the achievement of its economic role. This must mean greater emphasis upon facilities designed to ease the problem of transporting persons and goods. Major efforts must be made to improve traffic arteries designed to move traffic from the center to the peripheries and from one area in the city to another. For the purposes of the city itself, the comparatively neglected problem of inter-area arterial streets or expressways is probably the more important one. Expensive terminal facilities are undoubtedly indispensable complementary requirements—in the form of truck and bus terminals and parking facilities. Whenever possible, efforts should be devoted to encouraging the use of mass transit facilities, if only because of their far greater efficiency and lower private and public costs than those involved in the use of private automobiles. Each of these kinds of activities, however, suggests a transfer in resource use from the private to the public sector of the economy and, hence, higher relative levels of public expenditure. Such increases in expenditures, however, may well be so closely tied to the city's abilities to perform its functions that the alternative to their assumption may be only chaos and economic strangulation through traffic congestion. Moreover, if the national total of the costs of urban traffic congestion are anywhere near the 5 billion dollars per year suggested by some observers and, since the bulk of such costs are incurred in the major metropolitan centers, it is quite conceivable that adding an amount equal to as little as half of this sum annually to large-city expenditures designed to improve transportation facilities would represent true social economy.

If, as seems likely, the population of the central cities should be composed increasingly of lower income families, welfare and some other expenditure categories may become more heavily burdened. However, the net result of changes in the composition of the population are difficult to foresee. The need for expenditures of a kind that supplement private income through transfer payments may increase, but some that are complementary in demand with private goods may decline. Furthermore, to the extent that the center of the metropolitan

area is vacated by growing families whose places are taken by older couples and single individuals, the demand for such services as education and recreation may fall. Obviously, the net budgetary effect will differ from one city to another, depending upon the municipality's functional responsibility for education and welfare and upon the precise nature of the population shift. For New York City, for example, it is easy to foresee substantial increases in expenditure requirements. But for cities such as Milwaukee and Minneapolis, where the nonwhite population is now and may continue to be comparatively small and large-scale in-migration is not being experienced and where both education and welfare are not primary responsibilities of the city government, the prospects are quite different, in scale at least, if not in direction.

If existing revenue structures could be expected to supply an expanding flow of dollars which, in per capita terms, would be likely to match the increased need for funds, the fiscal outlook might well be a happy one. But the prospect is, rather, that the very development that we expect to bring an increase in expenditures will be likely to bring as well reductions in or only slowly rising tax bases and revenues.

The property tax accounts for some 60 per cent of the total tax revenues of the seventeen major metropolitan centers and 46 per cent of their total general revenues, the latter ratio ranging from under 30 per cent for New Orleans to about 95 per cent for Houston. Under present and foreseeable circumstances, however, the per capita property tax base of our central cities in real terms is likely to decline. This suggestion follows, first, from the fact that a great deal of property is being and will continue to be removed from the tax rolls as space is taken for the provision of transportation facilities in the form of limited access and widened arterial highways and streets, public parking sites, and terminals.

A second factor that is suggestive of a decline in the property tax base is the less intensive use of urban land; that is, the reduction in the ratio of brick and mortar to land area. Contributing to this decline are the increasing need for private parking facilities closely adjacent to factories, office buildings, theaters, shops, churches, and so forth; plants designed so that they can be readily engineered for the horizontal movement of goods; and the increasing insistence on the part of architects and city planners upon the desirability of providing for "green spaces" if redeveloped areas are not to revert rapidly to slum and blight.

In addition, because major metropolitan centers may expect to lose substantial portions of their manufacturing activity while gaining in service employment, defined in the broadest sense, this must mean a continuing shift from the location in the cities of the more capital-

intensive to more labor-intensive activities. This, then, provides a third major reason for expecting that the property tax base per person served, if not per person resident in the city, will decline.

Finally, if income levels of central city residents decline through population shifts, we may expect as well that the value of residential property occupied per person will fall.

In some degree the improvement of transportation facilities or the easing of traffic congestion and easier entry to and egress from the central city may add to property values. But I should guess that suburban property values will be the principal beneficiaries of such improvements and that the central cities will do well if they can manage by such means to prevent traffic congestion and other related difficulties and costs from bringing about rapid deterioration in land values.

III

Perhaps the single most important obstruction preventing the major cities from adjusting their fiscal structures to fit present-day requirements is failure of the states to recognize their responsibilities and proceed accordingly. "Home rule," among other things, should be given a meaning appropriate to the needs of our larger metropolitan centers—a meaning based upon recognition of their administrative capacities and fiscal needs and abilities.

I should think that a very high priority must be afforded to the broadening of taxing powers. In general, however, before this extension of powers can be expected to be forthcoming state legislatures will have to be convinced that measures that are inappropriate if applied to all local units or even all cities can be most appropriate if their application is restricted only to the largest cities. The fiscal chaos that may be wrought by such measures as Pennsylvania's famous "Act 481," or "tax anything" law, or California's general grant to municipalities of authority to levy sales taxes has no real relevance for these cities. Philadelphia and Pittsburgh or Los Angeles and San Francisco can well afford the administrative machinery requisite for the efficient administration of virtually any tax the states might or do impose. Nor would wide taxing powers extended to the major metropolitan centers involve the confusion and compliance difficulties associated with sales or income taxes imposed by clusters of small municipalities.

The major restraint that is pertinent arises as a consequence of a factor that is applicable to the states themselves, albeit in lesser degree. It is the fact that the geographic boundaries of the taxing jurisdiction are not coterminous with those of the economy of which it is but an integral part. Thus with goods, people, and capital free to flow back and forth across city borders and intense interlocal competition for

sales, wealth, and plant and office location, the competitive position of the tax-imposing city may be endangered and the effectiveness and equity with which taxes can be applied may suffer. It may be argued, however, that the restraining influence exerted may serve to prevent city rates imposed at such levels as to suggest pre-emption of important actual or potential state sources of revenue. If, in the face of this kind of restraint, the city chooses to impose tax rates that are in fact "too high," it should be privileged to make this choice freely. The notion that the economy of the whole state might suffer seems pertinent only if the offending city is in fact a very large part of the state, in which case the argument would seem to lose much or most of its relevance: the city is, then, the state in all but the political sense. This factor is likely to attain importance, moreover, in inverse relation to the breadth of the grant of taxing powers. That is, wide taxing powers that permit a broadly diversified tax system to provide the needed revenues with comparatively low tax rates are likely to produce fewer deleterious effects than would one or two major taxes imposed at higher rates.

Effectiveness in tax administration and equity in the application of city taxes may be difficult to achieve if evasion through the fictitious transfer of the situs of transactions and income is readily achieved. In the case of business transaction or turnover and sales and other consumer taxes, administration may be rendered difficult primarily because of the position of the city as the center of a growing metropolitan complex. Perhaps the only quick answer to be offered here is the suggestion that close attention be paid to the application of use taxes or appropriate equivalents, opportunities for audit through checking of registrations in the case of automobile purchases, and so forth. In the case of personal income taxes, withholding of income earned in the city should present little or no difficulty. Certainly much more could be accomplished through this device with respect at least to certain kinds of property income than is now being done at the federal, state, or local level. Banks, savings and loan associations, locally-based corporations, and other dividend and interest-paying institutions could be required to withhold at the source with respect to payments to city residents. Much of the rest of property or business income could be reached through effective scrutiny of federal or state information and tax returns, requiring the filing of declarations of estimated income and current payment, and various other techniques. Not all problems would be solved, of course, but enough of them could be to make the large-city income tax an acceptable revenue device.

In the case of corporate or business taxes the states may fear the prospect that through the use of such taxes the central city may succeed in financing itself in part by indirectly imposing burdens upon the out-

state area. Probably, however, the only really defensible business taxes are a tax on net income, when used to complement a tax on personal income, and a tax based on value-added, designed to reflect the benefits of city services that represent a part of the social costs of production. In the case of business taxes resting upon either of these bases, especially the latter one, the city may be said to have a sound claim to the right to expect that a part of the taxes levied by it shall be borne by consumers or income recipients benefiting indirectly from the provision of city services. The problem narrows, therefore, to the one of deciding upon an acceptable formula for the allocation of business income or value-added. The answer suggested by the so-called "Massachusetts formula" turns out, of course, to be anything but the easy or appropriate one, entirely apart from the difficulties involved in determining the situs of sales, treatment to be accorded rented property, situs of payrolls of traveling employees, and so forth. If our objective in taxing corporate income or value-added at the large-city level is to enable us to reach all income originating in the city, then it is extremely difficult to decide what weight, if, indeed, any weight, should be attached to the sales factor in our allocation formula. The strongest argument for its inclusion is most easily attached to efforts to encourage the location of export oriented plants and to impose a minor tax penalty upon imports. The administrative difficulties attached to the attempt to reach the income of corporations occupying no property in the city are probably insuperable, so that in fact the latter half of this argument collapses and, in my view, sales should be dropped as a factor. This conclusion is, I think, strengthened by the fact that the locale of the origin of business income is found at the place where those activities that bring the product to the form in which it commands its selling price are located. I suggest that it is unreasonable to assume that one-third, for example, of the income originating in New York City vanishes because the destination of the product sold is Hoboken rather than Brooklyn. Any other fraction would obviously be as difficult to defend. If reaching income originating or factor costs incurred in the city is our objective, therefore, the allocation formula should take into account only payrolls and tangible property.

The case for this conclusion is further buttressed when we recognize that city services are essentially services provided for the benefit and protection of persons and property and, for business firms, in large part constitute services to property or, essentially, directly or indirectly, factor inputs associated with the number of persons employed or locally served by the business and the value or extent of property used. Thus, again it should not be necessary to go beyond property and payrolls in seeking an allocation formula that will be reasonable and that will not,

certainly not any more than the local property tax, unfairly or unreasonably impinge upon the economy of areas outside of the city.

Taxes other than general sales, value-added and income taxes have little or nothing to commend them to major metropolitan centers which, it is to be hoped, will not follow the lead of the states and the federal government in selecting more or less convenient sitting ducks, irrespective of rules of sportmanship or the flavor of the game.

For administrative reasons and in the interests of the taxpayer there is much to be said for the cities being permitted and encouraged to employ supplements to state imposed taxes. Questions of allocation and their administrative handling would require close co-ordination in the efforts of state and city officials. The device seems most promising in the sales tax field, somewhat more difficult to handle in the case of the personal income tax, and, in the case of the corporate income tax the allocation problem may be such as to require a separate administrative organization. Even here, however, the adoption of the state definition of income would seem desirable, at a minimum.

If we recognize that government at the city level cannot really hope to operate effectively or importantly in what Professor Musgrave has called the "stabilization" and "distribution" branches of the public economy but is, by its very nature and the limited scope of its jurisdiction, limited to the "service" branch, much can be said in favor of more extensive use of service charges. That is, if the federal government may be assumed to be responsible for whatever income redistribution is to be achieved through overt governmental action aimed at this end and is to be relied upon for achieving economic stability, then the roles of both state and local governments may be properly regarded as lying in the area of providing for the services and goods that are to be supplied in the public sector of the economy. At the extreme this would suggest that the cities should simply charge public prices to cover the costs of services that people wish to buy. But with respect to the consumption of many such services there are important economies and diseconomies external to the individual as consumer and consumer sovereignty would give us less than optimal use of some services and greater than optimal use of others. Moreover, some services are not subject to the principle of exclusion and others are not divisible in such fashion as to permit charging the consumer on a per unit basis. Under either or both classifications probably education, police and fire protection, and streets and highways fit most obviously. Service charges designed to cover average or marginal costs may be most appropriate in the cases of the operation of recreational and cultural facilities and in financing water, sanitation, garbage and rubbish collection, and so forth. For these purposes, I should think that in

most of the large cities the use of service charges should be encouraged. Taxes and state aid would then be relied upon to finance other services.

Not fitting quite into the role of either tax or service charge is the charge that may be imposed upon users of private automobiles in the major metropolitan centers. At best, present taxes paid by autoists cover the costs of their share of state financed interurban and rural highways, some urban state financed arterial streets and, in some states, state aid to cities for highway purposes. Outside of the larger metropolitan centers the external diseconomies associated with the use of the highways may not warrant special charges, but if we continue to ignore this factor in these centers the problem of dealing with traffic congestion and its costs appears to be an insuperable one. State tax rates are fixed to meet the state's needs and even if the requirements of the central cities should be more generally included in these needs motorists would continue to add far more to total social costs of city auto use than they would pay in taxes. If we recognize the special nature of this problem as it applies to the larger cities and further admit the crucial importance of transportation to the cities' ability to function adequately, we must also admit to the necessity for the imposition of user charges by these cities. Properly designed, these charges would permit the use of the price mechanism to ration the scarce resource. But tolls charged for the privilege of using city streets are obviously impossible to apply, city gasoline taxes are too easily avoided, especially by commuters, and registration charges would not reach the latter at all. Lowell Harriss' suggestion of a tax graduated steeply according to the length of the vehicle is appealing but, as he points out, it would require levying at the national level to make it effective.

For the cities the most plausible device would appear to be sharply increased parking fees and drastic reduction in the extent to which the most costly of all parking—on-street parking—is permitted. Limitations, through zoning provisions, on commercial parking facilities and appropriate assessment of land used for this purpose are called for as well. But just as the problem of urban congestion cannot be solved rationally by building more limited access highways, neither can it be solved satisfactorily by limiting demand for access to the city. Our problem is one of relieving congestion and at the same time adding to the ability of the central city to function. We want to facilitate the movement of people and goods, not throttle it. It follows, therefore, that the problem must be approached, not simply as a problem in moving vehicles, but as one of moving people and goods. High parking charges will help to ration the use of urban streets, but accompanying this program we need one that will emphasize the obligations of the city in providing for mass public transit. At present we find that Detroit,

for example, in spite of a program of expressway construction costing hundreds of millions of dollars, is fighting a losing battle with traffic congestion while its public transit operation in 1956 was squeezed to produce net income of more than $300,000. However, Detroit, like other major cities, is pushed to expand highway construction through state and federal aid—aid that is obviously not available for improving public transit. If the cities are to go forward, the public must be induced to use the socially economical mass transportation facilities. This can be accomplished only if all three levels of government co-operate in reversing current trends. Aid should be forthcoming for transportation —not solely or specifically for highways. Even the less densely populated major metropolitan centers can succeed in providing fast, comfortable, cheap mass-transportation if construction and maintenance money is diverted from arterial streets moving from the center to the peripheries to mass transit facilities coupled with construction and improvement of streets that provide access to public transit. The now congested areas would then be available for easier movement of goods, those for whom the use of private automobiles is worth the high parking charges, and, most importantly, the rapid flow of bus traffic.

The major change required in expenditure powers of the major metropolitan centers, therefore, would be in the public transit area. Public transit operation in the largest cities is no more a proprietary function than are construction and maintenance of arterial and feeder streets. Continued failure on the part of the federal and state governments and the cities themselves to recognize this can only lead to ever increasing economic waste and the increasingly ludicrous spectacle of higher and higher transit fares accompanied by deteriorating service driving more and more people to the private automobile as governments strive to make it more feasible to use private vehicles in ever larger numbers within limited space.

Most of the arguments favoring state aid to local governments are simply not applicable to the major metropolitan centers. In these cities income and wealth are at such levels that equalization aid makes no sense. Grants of this kind should continue, in large part at the expense of the cities, in the interest of maintaining minimum fiscal capacity to support functions of state-wide interest. Shared revenues suggest the superior taxing powers of the state. But these, too, ordinarily involve a net excess cost to taxpayers of the cities and their rationale is, in these cases, bereft of real meaning.

The occasion for these cities to look to the state for more revenue arises only when their taxing powers are narrowly limited—when, for example, it appears more desirable to tap state administered sales and income taxes for city purposes instead of the local property tax. The

demand for aid of this kind is, of course, especially pressing if property tax rates are limited. But when it is forthcoming as part of an over-all program of aid to municipalities, such as Michigan's sales tax diversion or New York's Moore Plan, with funds distributed on a simple per capita basis, the very nature of any state's economic structure is such that the central city's residents and business necessarily find their position in relation to the public fisc worsened rather than bettered.

If the cities' taxing powers are extended in the manner I suggested earlier, the question of state aid should become a minor one. However, to the extent that state grants to municipalities are continued or brought into being, they should be so designed as to take into account the fact that differences in the needs of municipalities persist even though they may all be classed as cities. Population as such is not an adequate measure of the obligations imposed upon a city. At least two other aspects of the large city's demographic structure should be taken into account. These are population density and the number of nonresidents served, as measured, perhaps, by the population in the metropolitan area surrounding the city.

IV

In discussing the role of the major metropolitan center in state-local finance I have attempted to draw attention to some features of the largest cities that point to the need to re-evaluate this role in the light of both their capacities and their needs, against the background of their economic functions. By implication, at least, I have meant to suggest the inadequacies of the property tax, with all of its crudities, as the major source of city revenues. As an instrument to be used in attaining rational land-use patterns, the property tax may have much to commend it, but buildings generally and tangible personalty of business are surely not subjects for taxation that are well designed to add equity to the distributional pattern of taxation, distribute the costs of city services in accordance with any other reasonable norm, or, perhaps most important, to alleviate those problems that now most trouble our central cities: congestion, obsolete plants, rapidly deteriorating housing in core areas, and so forth. Whatever may be the objections to sales and income taxes, they seem to pale when measured alongside those attached to the tax on urban improvements and tangible personalty. A property tax that weighs heavily upon a basic necessity of life in the form of house-room and adds substantially to the cost of capital improvements and the use of physical capital generally appears to be an anathema now in the largest of our cities.

If our major metropolitan centers are to assume a rational role in state and local finance, the principal changes suggested are these:

(1) state legislatures should broaden the cities' taxing powers to permit the exercise of the powers inherent in their size and economic structures; (2) reliance on the property tax should be diminished substantially over time, with land values assuming an increasingly important part of the total bill; (3) sales and income taxes and service charges should become the predominant sources of central city revenue; and (4) state aid to cities should recognize that demands for services are a function not alone of resident population but also of population density and the number of nonresidents served.

For the central cities it is important that some contribution to the financing of city services be forthcoming from the "contact" population. Thus full or partial priority should be afforded them in taxing the incomes of nonresidents earned in the city. However, to the extent that state aid may be based on the ratio of metropolitan area to city population, the case for this priority diminishes.

Extension to the major cities of limitations on borrowing powers that may be appropriate for local units generally is no more defensible than is the extension to them of narrow limits on their taxing powers. Certainly, if such limitations are continued, it becomes increasingly absurd to base them on assessed values of property as, even under present circumstances, the property tax becomes a decreasingly important measure of the city's ability to service debt.

Both the effectiveness and propriety of the kind of fiscal program I have outlined depend upon the assumption that the national government will succeed in achieving economic stability and at least minimal objectives in income distribution. Obviously in the face of substantial fluctuations in economic activity and price levels and the existence of large numbers of families in receipt of less-than-subsistence incomes, rational financing of our major metropolitan centers becomes impossible to achieve.

THE OUTLOOK FOR FISCAL NEEDS AND RESOURCES OF STATE AND LOCAL GOVERNMENTS

By Dick Netzer
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Although public agencies must compete for resources with each other and with the whole range of private alternatives, one clear lesson of the postwar decade is that state and local governments' usual lack of competitive prowess can react unfavorably on the growth of the private sector of the economy. Since 1946, state and local governments have had limited success in satisfying the demand expressed through both political and market processes for schools, roads, and other community services and facilities, while private industry quite apparently has more than matched demand with increases in capacity and output. These uneven degrees of success have among their results congestion of transport facilities, a marked scarcity of sites for new residential building, and anguish about the quantity and quality of the output of our educational systems.

Thus one may expect that the pressure for continued expansion of the scale of state and local government activities to cope with rising population and urbanization, to restore deteriorated standards of public services, and to raise standards further will be persistent.[1] This expectation has raised considerable alarm, sometimes on the ground that very large increases in state-local per capita tax burdens are inevitable, but more often (at least on the part of sophisticated observers) on the ground that inflexible and growth-insensitive state-local fiscal systems are insufficiently productive, with the result that the "crisis" in state-local finance will deepen appreciably in the next few years.

I. *Fiscal 1965 Models*

This paper is an attempt to assess the outlook for state and local government fiscal resources and needs over the next decade. More precisely, I have tried to construct a model of state-local finance for fiscal 1965 with the help of a variety of simplifying assumptions. The

[1] The term "standards" of public services in this paper in concept refers to objective physical standards. For example, constant standards of highway services would permit vehicles to move at the same rate of speed with no greater exposure to accident regardless of increases in the number of vehicles traveling between similar points at the same time. However, the expression of such standards in dollar terms presents great difficulties. In some cases, the expression is based on what are presumably expert judgments of other investigators. In other cases, good or adequate standards are equated with the recent per capita expenditure experience of governmental units believed to be performing a particular service well.

assumptions as to the course of economic activity are "no change" assumptions; that is, price level stability at early 1957 levels, substantially full employment during most of the period, and growth in real gross national product at the rate of the last decade, about 3.5 per cent annually. In addition, population is expected to rise by about 15 per cent from 1955 to 1965, with considerably larger percentage increases in the urban, aged, school age, and college age populations.

The expenditure estimates rest on the hypothesis that state and local agencies do not anticipate the demand for public services but expand the scale of operations only when confronted with actual increases in workload. The usual source of increased workload in an economy grow-

TABLE 1

STATE-LOCAL TAX REVENUE, FISCAL 1946, 1956, AND 1965 (PROJECTED)
(In Billions of Dollars)

Tax*	1946 Actual	1956 Actual	1965 Projected		
			1956 Tax Rates	Increased Rates†	Decreased Rates‡
Property	5.0	11.7	16.0	16.8	13.6
Income	.9	2.4	3.2	3.6	3.1
Consumption	2.2	6.2	8.6	9.5	8.6
Other	.8	2.1	2.8	3.1	2.8
Total*	8.9	22.5	30.7	32.9	28.2

* Excluding highway user taxes but including net receipts of liquor monopolies.
† Over-all, rate changes average +7 per cent.
‡ Over-all, rate changes average −8 per cent.
NOTE: The underlying detail is in millions of dollars and hence detail may not add to totals due to rounding.
SOURCE: Actual data for all tables from U.S. Bureau of the Census, *Historical Statistics on State and Local Government Finances, 1902–1953* and *Summary of Governmental Finances in 1956.*

ing relatively steadily is growth and movement of population, especially increases in the numbers of school age children, of people in newly developed suburban communities without existing public services and facilities, of elderly people with greater hospital requirements, and so on. Population changes constitute the principal dynamic factor underlying this model.

Public bodies respond to an increase in workload by gradually expanding the size of program if revenue is buoyant and the support for expansion articulate. If not, or if the increase in workload is too rapid for state-local political processes and institutions to cope with (as often seems to have been the case recently), then standards of service are allowed to deteriorate. Ordinarily, this deterioration will have fairly widespread and noticeable repercussions on the entire community and after a point will not be tolerated.

In this forecast, I assume that the anticipated increase in workload will not be accommodated by a further drop in standards; in fact, it seems a more justifiable position to assume that standards will be improved in response to urgent pressures from citizens. This is because the rise in workload in the past decade has so often been handled by permitting standards to drop—notably in schools, roads, water supply, and sewage disposal.

Three expenditure patterns have been prepared, function by function. The "high" pattern allows for very substantial improvement in service standards—not, to be sure, to the most grandiose standards to which the most avid sponsors of programs aspire. In most cases, it is assumed that all units of government by 1965 will be providing standards of service equivalent to those provided by the best performers today (recognizing the distinction between urban and rural requirements), or where performance is nowhere really adequate now, improvements beyond the best current performance to some objective standard. This implies that governing bodies will treat each function about as generously as might be expected if expenditures for all other functions increased but little.

What is designated the "probable" pattern somewhat more realistically recognizes that the various functions compete for fiscal resources and that while standards of service can be expected to rise considerably where services and facilities are seriously in arrears currently, the less pressing needs will remain unsatisfied. Also, functions for which standards nationwide seem to change slowly if at all, like police and fire protection, are not credited with changes in standards. It is "probable" in the sense that it expresses a personal judgment as to the extent to which communities will discount the inevitably inflated claims of particular pressure groups and to which state-local institutions and processes can actually expand services in a relatively short period. Recent experience has weighed heavily in quantifying this judgment.

The "low" pattern allows only for matching increases in workload due to population growth and movement, enrollment increases, etc. It has no improvement factor whatever, insofar as this impurity can be removed from the data, and as such is rather unreal. In this pattern, outlays for some functions do not increase at all, or even decline, as recent large-scale capital outlay programs phase out (e.g., public housing).

The revenue estimates are based on the expansion of the base for each major source of tax revenue which appears to be consistent with the assumed over-all economic environment. A fair amount of self-confidence, even arrogance, was needed simply to reconstruct the recent real expansion in the bases of major types of taxes, as a basis for estimating future expansion.

Three sets of revenue projections were derived from the tax base estimates. The first set of projections consists of revenues at constant 1956 tax rates. By tax rates, here I mean effective rates against the economic rather than the legal base; all changes in law and administrative practice—in nominal tax rates, in exemptions, deductions, and coverage, in assessment ratios, in use of particular taxes by units of government—are treated as changes in effective rates. Thus, constant 1956 rates mean that assessments will rise as rapidly as the market value of taxable property or nominal property tax rates will rise to

TABLE 2

STATE-LOCAL EXPENDITURES, FISCAL 1946, 1956, AND 1965 (PROJECTED)*
(In Billions of Dollars)

FUNCTIONS	1946 Actual	1956 Actual	1965 PROJECTED		
			"Probable"	"High" Pattern	"Low" Pattern
Education	3.4	13.2	19.0	22.9	14.8
Highways	1.7	7.0	9.7	11.4	8.0
Health and welfare, total	2.2	5.9	6.6	7.6	6.4
Public assistance	1.2	2.6	2.6	2.6	2.6
Hospitals	.6	2.2	2.8	3.6	2.6
Other community facilities and services, total†	2.3	7.2	9.6	10.5	8.2
Water and sanitation	.7	2.7	3.4	3.6	3.2
Police and fire	.8	2.1	2.6	2.9	2.5
Miscellaneous‡	2.0	5.3	5.8	6.6	5.3
Total	11.5	38.6	50.7	59.0	42.8

* Excludes all debt service payments, insurance trust expenditures, and liquor store expenditures.

† Includes, in addition to functions shown, local parks and recreation, nonhighway transportation, and electric, gas, and transit utilities.

‡ Includes natural resources, housing, general control, veterans services, and other and unallocable.

NOTE: The underlying detail is in millions of dollars and hence detail may not add to totals due to rounding.

offset any lags in assessments. The constant rate projection is in essence a floor, for 1957 legislative actions have already raised effective rates and local nonproperty taxes can be expected to spread further even if the over-all pressure for revenues is only moderate.

The second set of projections assumes increases in the effective rates of most state-local taxes somewhat comparable to those experienced in the last five years. The purpose here is to gauge fiscal resources in an environment in which fiscal needs are great but in which voter resistance may hold effective rate increases to limited proportions. A third set of projections, related to the low expenditure pattern, assumes in effect that the rate reductions permitted by economic expansion and

limited expenditure requirements will take the form of lagging property assessments, the expiration of temporary state income tax rate increases, and more generous state income tax allowances in those jurisdictions where the fiscal easing is greatest.

In addition to the tax revenue projections, there are separate projections of revenues associated with the scale and nature of expenditure programs; that is, federal aid and all varieties of user taxes, utility receipts, charges and fees for services, and the like. There is one set of projections tied to each expenditure pattern. Where no major change in the nature of programs has been assumed, as is generally the case with regard to the probable and low expenditure patterns, federal aid is estimated at the amounts existing legislation may be expected to provide. Where radical expansion of program has been assumed, as in education and hospitals in the high pattern, new legislation is expected to provide significantly more federal aid, though by no means all the funds required for the large expansion of service. Increasing reliance on user charges is generally expected in all three patterns, with larger increases for those functions for which user charges are most suited and for which expenditures show the largest relative increases. Recent experience has weighed heavily here, too.

II. *How Deep a "Crisis"?*

Finally, the revenue and expenditure projections have been combined in various ways, with the implied borrowing and debt service requirements added to complete the income statement. The conclusions appear in summary quantitative form in Table 3. To state the conclusions in their most unqualified form, it appears that in fiscal 1965: (1) the probable level of expenditures can be rather easily supported by the tax revenues produced by current effective tax rates and probable program-associated receipts, with borrowing requirements considerably below those of the last few years and with a rather modest net increase in outstanding debt; (2) the high pattern expenditure total, even when combined with moderate tax rate increases and substantially greater federal aid, would involve much larger deficits than have occurred recently, significantly more borrowing than in the peak year to date, and a rate of net increase in state-local debt outstanding equal to or greater than the very rapid rate of increase of the postwar decade; (3) if the high pattern requirements are to be met with borrowing limited to what seems about the absorbent capacity of the capital market (*ceteris paribus*), say five billion dollars a year, effective tax rate increases will have to be very substantial—almost as great as in the postwar decade—implying that constitutional and statutory tax limits will have to be breached widely and that few states will be able to

get by without a full array of income, consumption, and business taxes; and (4) if the most optimistic hopes of the antitax lobbyists were to be realized and all improvements in standards of service prevented, the scope for tax rate reduction would be large indeed—perhaps as much as one-sixth below current effective rates—in the assumed environment of economic growth.

In short, if the economy is generally prosperous, growing, and inflation-free during the next decade, and if state and local governments aggressively employ and adopt user taxes and other variants of the

TABLE 3

STATE-LOCAL EXPENDITURES, REVENUE, AND DEBT, FISCAL 1946, 1956, AND 1965
(PROJECTED UNDER VARYING ASSUMPTIONS)
(In Billions of Dollars)

	Expenditures per Table 2	Debt Service*	Tax Revenues	Federal Aid and User Charges	Deficit or Surplus (−)	Exhibit: Debt at Year-end
Actual 1946	11.5	1.9	8.9	4.8	− .3	15.9
Actual 1956	38.6	3.5	22.5	15.1	4.5	49.2
Projected 1965:						
"Probable" expenditure pattern and 1956 tax rates	50.7	4.9	30.7	21.8	3.1	61.3
"High" expenditure pattern:						
And 1956 tax rates	59.0	6.7	30.7	24.3	10.7	89.4
And higher tax rates	59.0	6.0	32.9	24.3	7.8	78.6
With borrowing limited to 5 billion dollars per year	59.0	5.3	35.0†	24.3	5.0	68.1
"Low" expenditure pattern:						
And 1956 tax rates	42.8	2.8	30.7	20.2	−5.3	28.1
And lower tax rates	42.8	3.6	28.2	20.2	−2.0	41.1

* Excludes debt retirement by refunding. The projected figures for debt service are the cumulative results of assuming an even rate of change in expenditures and revenues from 1956 to 1965 and assuming that each year's deficit or surplus will be reflected immediately in equivalent debt operations. Interest rates are assumed to rise gradually to an average rate of about 3 per cent and then to level off.

† Residual needs assuming borrowing of 5 billion dollars in each year of period, implying an over-all average rate increase of 14 per cent over 1956 tax rates.

price system, only moderate tax rate increases and not unreasonable volumes of borrowing would be needed to finance a level of state-local expenditures about halfway between the probable and high pattern. That is, a fair degree of improvement in service standards can be achieved. If, however, public agencies are to provide service at standards now widely held to be truly adequate across the board in 1965, radical changes in taxpayer attitudes, capital market conditions and institutions, and/or the federal government's role are apt to be necessary.

By now most of my auditors will have spotted a critical weak point in the presentation which indicates that it is too sanguine about the crisis in state and local finance. In large part, the situation in 1965

looks manageable because of "the wonderful device of compound interest." With steady economic growth, the gradual expansion of tax bases over a nine- or ten-year period is impressively large in dollar terms. In effect, the estimates here assume a smooth and gradual increase in expenditures as well over the decade.

But the deficiencies in services and facilities exist here and now and the effort will be made to overcome them out of revenues and borrowing in the next few years rather than evenly over the entire decade. Under any expenditure pattern, a relatively large increase in the early years followed by a slower rate of change in the later years of the period is to be expected. So, although there may be no serious crisis from a long-range viewpoint, the next three to five years may well be hard ones. To the extent that deficiencies in standards are due to inadequacies of plant and equipment, state and local agencies logically should be engaging in very large-scale borrowing in the immediate future—borrowing which they can support from the revenues to be produced by longer run economic growth.

Borrowing of this magnitude, say 10 to 15 billion dollars a year through 1960, would require plenty of agonizing reappraisals. The almost ubiquitous constitutional and statutory debt limits would have to go. Public agencies would need more leeway properly to price their flood of offerings in a capital market with an abundance of alternatives for investors. Increases in tax rates and imaginative utilization of user charges to provide debt service cover for the large volume of offerings sold at higher yields would be imperative. State-local securities would have to be made more attractive to new classes of investors, and this might well entail the surrender of tax exemption and other drastic changes. In short, state and local governments would have to leap institutional obstacles to compete for funds and pay the price demanded. Of course, if stabilization considerations called for severe restraint on all capital formation, this could not be done. But short of so severe an inflationary push, in an economy with reasonably fully employed resources, the issue is who gets the resources; it makes considerable sense for state and local government to compete aggressively enough to move from the end to near the head of the queue.

Aside from this not inconsequential problem of timing and its resolution through compound interest, my prophecies are less dire than those frequently voiced largely because of the very large difference between the GNP elasticity of state-local revenues in my model and the elasticities computed by other investigators. As we will see, it is my constant effective property tax assumption which makes the difference.

Tax revenues projected under my constant rate assumption from fiscal 1956 to fiscal 1965 show an elasticity of around 1.1 including

highway user taxes and about 1.0 excluding those taxes. That is, each 1 per cent rise in gross national product will produce a slightly greater than proportionate rise in tax revenues. The indicated elasticity of state-local tax revenues in the past decade, adjusting revenues to correct for changes in effective tax rates to the extent feasible with limited resources, ranged from 1.11 to 1.16, depending on the starting points chosen and the treatment of highway user taxes. The elasticity of actual tax revenues, which includes the effect of changes in effective rates, ranged between 1.47 and 1.60.

In contrast, the estimates made by Harold Groves and C. Harry Kahn five years ago for periods between 1929 and 1950, mainly for midwestern states and related to the income payments series rather than the GNP series, show elasticities for total state and local taxes in the 0.43-0.56 range and for state-collected taxes in the 0.63-0.90 range.[2] These estimates have been employed by other investigators rather uncritically.

Most of the difference can be accounted for by a difference in definition regarding the property tax. Groves and Kahn use property tax assessments to measure elasticity, whereas I have used property tax revenues at constant effective rates or, in other words, an estimate of the change in market value of taxable property. A perceptive critic has shown elsewhere, first, that property tax assessments are likely to be reasonably sensitive to secular changes in GNP although rather insensitive to shorter term cyclical swings (with which Groves and Kahn were principally concerned), and, second, that the 1929-48 behavior of property tax assessments was historically aberrant and unlikely to be repeated.[3] My own position is that, in the absence of calamitous depression or rapid and prolonged inflation, the ratio of assessed to market value is not likely to change greatly, and that, in any case, in such an economic environment it is not unreasonable to hold effective rather than nominal rates constant in projecting fiscal resources. Thus I show a property tax elasticity of 1.0, compared to the Groves and Kahn figure of 0.22 or the Burkhead figure of 0.75.

Furthermore, I am convinced that except in a very abnormal economic climate, few state and local tax bases will grow appreciably less rapidly than GNP, except perhaps the death and gift tax base. The transactions which are the measure of most consumption and business taxes with few exceptions tend to comprise an expanding share of total activity. In my model, two notable exceptions are cigaret taxes (because of the health issue) and general sales taxes (because services,

[2] Harold M. Groves and C. Harry Kahn, "The Stability of State and Local Tax Yields," *A.E.R.*, Mar., 1952, pp. 87-102; see especially Tables I and II, pp. 90 and 94.

[3] David M. Blank, "The Role of the Real Property Tax in Municipal Finance," *Nat. Tax J.*, Dec., 1954, pp. 319-326.

especially those connected with housing, are so frequently not covered).

This view of elasticities bears on one's conclusion as to the outlook for state-local finance. In brief, I conclude that inflation (and the liquidation of the thirties) has been the major culprit in the recent past rather than the inherent and inviolate nature of state-local revenue systems. If we are to have a good deal more inflation, drastic pruning of institutional obstacles will be needed if state and local governments are to compete effectively for real resources. If we are to have relative stability with real growth, then the problem is one of the next few years, not a truly long-term one, and some patchwork reforms may suffice to enable state and local governments to provide an increasing volume of public services at reasonably (though not fully) adequate standards.

III. *Some Supporting Detail*

The bare totals, indicating that under the various alternatives expenditures rise from 11 to 53 per cent and tax revenues from 25 to 56 per cent in the nine years 1956-65, are not very satisfying. The remaining paragraphs, therefore, are devoted to some of the more important components. Expenditures are treated first.

Education. The elementary and secondary school component here is related to findings of such groups as the 1955 White House Conference, which were ably handled by Jesse Burkhead at these meetings last year.[4] The low estimate is based on the same per pupil current costs as now prevail for the country as a whole plus capital outlays somewhat below the current 2.5-3.0 billion dollars rate, to imply no better housing of the school population. Debt service for schools, which in the tables shows up only in the debt service totals, would probably amount to more than double the current amounts, even in this low estimate, due to the impact of 20-25 billion dollars total additional borrowing for schools over the nine-year period. The high estimate is an attempt to allow for the cost of bringing all schools up to the standards of the best today and amounts to a total about 75 per cent greater than in fiscal 1956, exclusive of debt service. There is some evidence that even this understates the cost of a universal foundation program, especially if the sputniks are to raise our standards of adequacy in secondary education. The probable estimate allows for improvement in standards about halfway to the optimum, with considerably greater improvement in the quality of capital facilities than in the quality of current instruction.

The higher education component relies on information in the recent report of the committee appointed by the President.[5] The estimates are

[4] "Financing Education," *A.E.A. Papers and Proceedings*, May, 1957, pp. 198-208.

[5] The President's Committee on Education Beyond the High School, *Second Report to the President* (Washington, D.C.), July, 1957.

compounded of the anticipated rise in enrollment and varying assumptions as to the rise in faculty salaries and the possible or probable economies of scale, including declines in the faculty-student ratio. The high estimate just about covers the recommendations for fully competitive salaries and capital outlay needs, while the probable estimate goes about two-thirds of the distance in improving standards, especially faculty salaries.

Highways. The probable estimate shown in Table 2 is based on an analysis presented elsewhere and combines the impact of the 1956 federal highway legislation and my own judgment of the probable course of action of state and local agencies in regard to road work not eligible for federal aid in the expected fiscal environment.[6] The low estimate would prove correct if state-local governments drastically cut back on nonfederally aided work to obtain matching funds or if they simply substitute federal money for funds they might otherwise have spent in the same way. The high estimate more or less arbitrarily assumes that new construction will be about one-fifth greater than now seems probable.

Health and Welfare. Public assistance costs in all three patterns are assumed to remain at current levels, assuming of course no inflation and prosperity. Assistance to the needy aged, which absorbs most public assistance funds today, should decline as the expanding scope of social insurance relieves the pressure of a rising over-65 population. Hospital outlays, on the other hand, can be expected to continue rising; during the postwar decade the rise has been sharp even on a real per capita basis. Unmet needs for mental hospital facilities plus an aging population should continue the pressure, although as the very recent leveling off in state-local outlays may presage, most future needs for hospital services (except for mental hospitals) may be handled by private nonprofit institutions. The high estimate assumes a net increase in state-local bed capacity and current costs of about 50 per cent by 1965 and further improvement in the quality of treatment at state mental hospitals. In the probable estimate, the net increase in capacity is only 20 per cent, but capital outlays are considerably above recent levels.

Other Community Facilities and Services. In recent years, water supply and sewerage facilities have been greater problems in the rapidly expanding peripheries of metropolitan areas than anything except schools. The probable figure here is the result if the entire populations of metropolitan areas in 1965 were to be served at standards comparable with the core cities today; the high figure allows for further im-

[6] Dick Netzer, "Financial Policy for Highways: Impact of the 1956 Federal Legislation," *Nat. Tax J.*, June, 1957, pp. 114-125, especially pp. 115-117.

provement within the big cities themselves. Growth in urban population, however, is a considerably more important influence on these expenditures than changes in standards. Urbanization similarly is the main influence on police and fire protection costs; the different estimates reflect differing rates of adjustment to this change in environment. Among the other functions in this group, large relative increases are expected in outlays for local parks and recreational facilities; expanded work on port and airport facilities is expected, except in the low estimate which assumes that the capital expansion will be largely completed by 1965; and the estimates for expenditures on publicly-owned transit facilities depend on varying guesses as to the likelihood of future extensions of rapid transit plant.

The miscellaneous group combines functions which historically have shown marked secular improvement and which have evidenced little real per capita change. Much of the difference between the three estimates presented in Table 2 is due to the housing and community redevelopment function. The low estimate assumes little new work after the next five years, while the high estimate assumes continuation of a fairly vigorous federal public housing and urban renewal program. The probable estimate provides for little new public housing in 1965, but continued capital outlays for urban renewal.

Tax Revenues. Perhaps the most questionable elements here are the methods of estimating past and future changes in tax bases. Space limitations preclude any extended discussion of tax base estimating methods, but a few of the more troublesome areas can be mentioned. The worst of course is the property tax. Here the approach used was to bring crudely forward to the present on the basis of available evidence various components of the national wealth estimates made by Raymond Goldsmith in *A Study of Savings,* dealing only with the components generally subject to the property tax; that is, excluding, among others, governmental property, intangibles, and nearly all consumer durables. Death and gift taxes were scarcely less of a problem, and federal estate and gift tax information provided the only clues, and poor ones at that. Available data could be manipulated to provide reasonably well-tailored bases for most income and consumption taxes. However, the two "all other" groups in census data—selective sales taxes except on motor fuel, alcoholic beverages, and tobacco products and "all other taxes, including licenses and permits"—have rather dubious bases.

DISCUSSION

LYLE C. FITCH: Professor Brazer's excellent paper deals with a field abounding with different points of view. Brazer most ably reflects one viewpoint. My comments will be launched from a somewhat different and probably more radical one.

First, I think that Brazer, in concentrating on central cities, has underemphasized other problems which exist in many large metropolitan places and which have been largely responsible for the recent revival of interest in the metropolitan area phenomenon. The core city, I think Brazer would agree, is not the proper framework for considering many problems of modern urbanism, including transportation, water supply, sewage disposal, air pollution, and the like. I submit that in many areas finances and financial administration are among the most pressing of the problems which can be handled effectively only on a metropolitan area-wide basis.

There are several categories of financial problems. The first concerns the chronic revenue shortages of many local governments in metropolitan areas; the second concerns the need for means of financing governmental activities which can best be handled on a metropolitan-wide scale. The third has to do with revenue machinery and administration.

Disparities in Financial Needs and Resources. The country's metropolitan areas, being concentrations of wealth and income as well as population, presumptively have the economic capacity to finance their governmental requirements. But what is true of the whole is not true of each of the parts; there are wide differences in the economic capacity of different jurisdictions, relative to need, in many metropolitan areas.

Brazer's main concern is with central city finances. He cites a significant correlation between central city per capita expenditures and the proportion of metropolitan area residents outside central cities. But I think we should be wary of concluding from this observation that the suburbs are a net burden to the central city, or that there is typically an imbalance in the capacities of central cities and aggregate suburban governments to meet their expenditure needs, which needs redress. So far as I know, this point has not been demonstrated. To quote from a recent report, "a priori, there is no reason to believe that the increment in the tax receipts of the central city accompanying the commuter is less than it costs the city to attract and service him."

Several recent studies, including Margolis' studies in the San Francisco Bay Area, show that the greatest discrepancies in financial capacity, relative to need, are among residential suburbs rather than between central city and aggregate suburbs. One of the prime movers behind the creation of Metropolitan Toronto was the inability of several suburban communities to finance school and other services. And suburban residents and business firms in many suburbs around New York find that they are not saving anything tax-wise by being outside the central city.

To put the commuter problem in still another conceptual framework,

I would suggest that costs of city services to commuters (i.e., the "contact" population) can be considered to be met by taxes on business firms which they serve and patronize. If there are clear economic advantages in imposing user charges for specific services, such as the limitation of demand, then commuters can be required to contribute in this way, along with residents. The costs associated with the commuter's residence are of course met in his residental jurisdiction. If the commuter has any obligation to the central city, it may be to help support the welfare services which tend to be concentrated therein, but which should be the responsibility of the whole community.

These facts suggest that the problem is not so much with the revenue-producing machinery of central cities as such, but with organizing the resources of the entire metropolitan area.

Revenue Administration. One of the main needs to be served by metropolitan area-wide governmental machinery, in fact, is that of efficient tax administration. Though the large central cities are big enough to avoid the typical difficulties of local taxation which arise from small-scale administrative organization, other metropolitan jurisdictions usually are not. Geographically, taxing areas should be large enough and isolated enough to prevent avoidance by persons and firms moving over boundary lines or going outside the jurisdiction to shop. Even Los Angeles, with its vast area, encountered this problem with its local sales tax, as does also New York City. Consolidation of the taxing function also avoids the difficulties of intergovernmental jurisdiction and allocation of tax base, which are inherent in many nonproperty taxes when imposed by several neighboring jurisdictions. While this problem may be avoided, as Brazer suggests, by limiting the nonproperty taxes to the central cities, this solution may squeeze other metropolitan jurisdictions.

We can at least dream about what things might be like in the almost perfect metropolitan area setup. Property should be assessed for tax purposes by an area-wide agency. In the use of the tax, there might be metropolitan levies for metropolitan services deemed particularly to benefit property and additional local levies for local government functions. Only metropolitan jurisdictions would be authorized to impose nonproperty taxes. These would include general sales and amusement taxes and a levy on personal income and perhaps a simple form of value-added or net income tax on business firms; in other words, the same list mentioned by Brazer.

I sympathize with Brazer's antipathy to property taxes, but would point out that sales and income taxes may not always be preferable alternatives. As to inequities of burden, so far as could be determined in an extensive study of New York City taxes several years ago, the real estate tax was no more burdensome on the under-$4,000 income households, per dollar of tax revenue, than was the retail sales tax, and much less burdensome than the alternative of a Philadelphia-type income tax. Another fact, at least obliquely relevant, is that the great bulk of residential property in New York City and many other major cities benefits from special governmental aids of one kind or another—through tax concessions or underassessment, FHA or other special financing, and direct subsidies.

Metropolitan Transportation. In general, I subscribe to Brazer's comments on the deficiencies of urban transportation planning and policies, except to emphasize the need for the metropolitan approach in this area, also. I would add, however, that a great and generally unrecognized need is for co-ordinated pricing policies to obtain a better balance in the use of various types of facilities. I think that bad pricing policies are responsible in considerable part for the impoverishment of urban transit, and the fact that automobile congestion continues to increase, while mass-transportation in most areas is declining or on a plateau.

A rational pricing policy requires that we go either in the direction of raising costs of automobile use in congested areas, or of lowering mass-transportation fares while improving service. The first policy would involve no subsidies, or limited subsidies, and the second, large subsidies. In general, I see no reason why intra-urban transportation as a whole should not be a self-supporting function. In particular cases, however, the large-subsidies approach may be desirable, for instance, to prevent the economic decline of core cities.

WALTER W. HELLER: All students of state-local finance are indebted to Mr. Netzer for his perceptive analysis and highly useful projections. By a research effort in which the ratio of heroic labors to heroic assumptions is much higher than in most projections, Netzer has given us the most careful estimates produced to date on the fiscal future of state-local government. Both his paper and the "background tables" and related statistical data which the *Proceedings* cannot accommodate should serve as a basic reference for the growing throng of research workers in the field of state-local finance.

Having acknowledged Mr. Netzer's contribution, I could perhaps stop at this point and sit down. But that would violate the usual Newtonian format of these meetings whereby each action sets up an equal and opposite reaction. If Netzer concludes that the 1965 state-local financial problem is rather easy, I am duty-bound, by convention, to show that it may, in fact, be rather difficult. If he foresees probable expenditures at X level, my duty is to show that Y level is truly more reasonable. If he attributes a given change in revenues to changes in tax rates (broadly defined), my job is to show that it can just as reasonably be attributed to a change in tax base.

To establish these at-least-equally-reasonable counterpositions, I must question assumptions, point up gaps, devise tests of reasonableness that cast doubt on his results, criticize statistical techniques or their applications, and challenge unsupported statements. Throughout this process, I must ruthlessly suppress the still small voice reminding me to be thankful that it is he, not I, who is the target of this commentary and it is he, not I, who is undertaking the arduous task of broadening and deepening his projections for presentation to a conference sponsored by the National Bureau of Economic Research in the spring of 1959.

Assuming price stability, a 15 per cent increase in population, and a 36 per cent growth in GNP, Netzer projects a "probable" level of state-local expenditures representing 9.2 per cent of GNP in 1965 as against 9.6 per cent in 1956. Is this falling ratio reasonable? I think not. The triple pressures of growing prosperity, expanding and shifting population, and disparate increases

in productivity (not to mention continuing deficiencies in state-local plant and equipment) will push hard on state-local resources for years to come.

As per capita GNP rises from $2,450 in 1956 to $2,850 in 1965, the desire to use our economic abundance to generate higher levels of human well-being is likely to exert upward pressures on state-local spending far overshadowing any offsetting savings in programs for relief of poverty and misery.

As to population, Netzer himself uses figures which demonstrate that both in composition and location, the 1965 pattern will be considerably more expensive, governmentally, than the present pattern: population 65 and over will rise by 23 per cent; school age population, by 30 per cent; college age population, by 40 per cent; and population residing in metropolitan areas, by 21 per cent. (Figures taken from Netzer's unpublished background tables.)

Increased productivity pumps up wages and salaries throughout the economy, yet the services purchased by state-local governments do not share ratably in that rising productivity. Moreover, they seem to be heavy buyers in markets for products of industries, e.g., construction, whose costs and prices have risen faster than the average. Therefore, the prices they pay (per unit of stable quality) can go up even when the over-all price level remains steady as Netzer postulates. An indication of this is provided by the implicit price deflators for GNP by major segments in recent years. With 1947 as 100, the deflator for GNP for 1956 was 124.9; for personal consumption expenditures, 120.1; for new construction, 138.0; for federal purchases of goods and services, 129.9; and for state-local purchases, 146.6. Even during the 1952-56 period of near-stability in the consumer price index (up only 2 per cent in four years), the "price" of goods and services purchased by state-local governments rose over 7 per cent.

At this point, I must digress to say that the state-local deflator used in the national income accounts actually overstates my point because it makes no allowance for increases in productivity in education, health, and similar services provided through direct governmental employment. The entire increase in wage rates is, in effect, counted as a price increase, yet some offsetting rise in productivity must surely be taking place. The possible impact of this may be at least dimly perceived by looking at the past decade. In current prices, state-local purchases rose from 5.5 per cent of GNP in 1947 to 8.0 per cent in 1956. But in 1947 prices, they rose only from 5.5 per cent in 1947 to 6.8 per cent of GNP in 1956. An allowance for some productivity increase in state-local services would correspondingly reduce their price deflator and increase the state-local share of real gross product. It may be that Netzer by-passes much of this problem by disaggregating and working on a function-by-function basis. But all of us who work with expenditure projections would be well advised to guard against distortions that may arise from this "current versus real" disparity.

Returning for a moment to broad tests of reasonableness, one may develop further doubts about Netzer's expenditure projections from crude extrapolations of state-local spending increases from 1952 to 1956: the average rise was 2.7 billion dollars per year. Projecting this to 1965 would give us a total of 65.6 billion dollars (38.6 plus 27.0 billion); or even reducing the figure to 2 billion a year would give us 59 billion in 1965, equivalent to

Mr. Netzer's "high pattern expenditures." Projecting to 1965 the proportion of the increase in GNP in the 1946-56 period—13 per cent—devoted to expansion of state-local spending (it was 16 per cent from 1952 to 1956) also brings us near the 60 billion dollar level in 1965.

In other words, mounting the aggregates and riding off towards 1965 brings me consistently to the upper end of Netzer's range. True, if we are currently catching up—making up lags in the levels of services and bringing our state-local plant and equipment capacity closer to required output of services—we can expect the absolute increase as well as the rate of increase to slow down. But Netzer's discussion emphasizes that we are far short of adequacy on both counts. These global projections, then, suggest another close look at the expenditure components to determine whether the high pattern standards of service are truly high relative to 1965 GNP; whether the full impact of rising real costs, especially in services and construction, has been taken into account; and whether the possibility of more or less entirely new programs—for example, nuclear fall-out shelters, large-scale urban renewal programs, public investment in rapid transit facilities to unsnarl urban traffic—has been given sufficient weight.

For lack of space, let me do no more than list a few additional points which require further sharpening or merit further probing.

1. Such phrases as "best performers" and "inadequate performance" call for specification of the performance standards being applied, so that others may be better able to use or test the expenditure projections.

2. Implicit assumptions as to the distribution of governmental functions and the course of federal spending and taxes by 1965 should be made explicit, since state-local fiscal capacity (in terms of both economic potential and the will to tax) hinges in considerable part on federal expenditure and tax levels.

3. Given the likelihood of further secular inflation, one would hope that an analysis of its disproportionate impacts on various revenue and expenditure items will be made a part of any expansion of the Netzer study.

4. On the property tax projections, Netzer has put the revenue elasticity analysis in proper focus, but would his estimate of unit elasticity in terms of GNP hold up under further disaggregation? Census and Agriculture Department data, for example, show that from 1945 to 1957 the value of farm land and buildings (about one-eighth of the property tax base) more than doubled—from 46.4 to 109.5 billion dollars—while farm GNP (in current prices) was rising roughly one-third. Offsetting tendencies must have been at work. These may or may not continue.

5. Finally, the individual income tax projection for 1965 seems too low. In applying his ingenious technique for separating automatic responses of revenues to changes in income (i.e., "changes in base") from legislative and administrative changes in liabilities (i.e., "changes in rates"), Netzer may have underestimated the former. Given rather sharp progressivity in the below-$10,000 income range—for a married couple with two dependents, the average state tax liability in the 29 full-fledged income tax states rises from $33.40 at $5,000 to $178.80 at $10,000—growth in income will produce a considerably greater than proportionate growth in revenue at stable rates.

AGRICULTURAL PARITY

INTRODUCTORY REMARKS

By JOHN D. BLACK
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It appears to me from the notes that the two principal performers on this program have sent me in advance that if this joint session of the AEA and AFEA is to make the contribution to solving the farm problem that it should, some preliminary statements on historical background are much needed. First of all, there was tremendous interest after the break in farm prices that came in 1920 in determining the cost of production of the different farm products and basing prices on these. Congress appropriated large sums of money for determining these costs. In response, H. C. Taylor, who had just been put in charge of the farm management and cost work in the USDA, set up cost route projects in about twenty-five of the states. Some of you will remember his suggesting "bulk-line costs" in place of average costs.

There was also strong interest in restoring the farmers' fair share of the national income from the 10 per cent or less to which it had fallen after 1920 to the 15 to 18 per cent to which it had risen in the war years. Taylor himself published at this time an article to this end in the *Journal of Farm Economics* in which he said that restoring this fair share was "the new agricultural economics." The procedure for achieving this that became most popular was that of the Aaron Sapiro co-operative marketing movement; namely, to sign up 90 per cent of the national output of a product under contract with a strong central co-operative, which co-operative would feed the market only what it would take at a "fair" price.

George Peek and those who developed the McNary-Haugen plan conceived as a substitute for cost of production as a basis for fair prices the idea of "fair exchange value." This was really nothing more than the economist's familiar concept of the "terms of trade." Farmers were to be given prices for their products that would buy what they had been able to buy with them in normal prewar years. This would be measured by comparing an index of prices received with that of prices paid. How such prices were to be achieved we need not discuss here. We will all have to admit that fair exchange value was a more workable measure of support levels than cost of production.

The cost-of-production idea was not dead, however. Senator Norris, of Nebraska, fought for it to the end, as Professor Vining outlines in

his notes. It came within five votes of winning out over the parity standard in the final voting on the Agricultural Adjustment Act of 1933.

The parity standard of course had the serious omission that it did not allow for changing inputs—like machines for labor or more fertilizer—or changing input-output ratios. Neither did it allow for relative changes in demand. An attempt to correct for this was made in the "modernized" parity introduced in the Agricultural Act of 1948. This standard accepted the concept of "normal prices" and assumed that the average prices over a ten-year period would reflect such a normal. I need not tell you that the ten years before 1950 were highly abnormal. Still, modernized parity was a better standard than old parity and would have helped if it had been allowed to go into effect at once.

A basis for price-support levels for different products much better than any of these was proposed to Howard Tolley when he was AAA administrator; namely, to make current year-by-year operating unit or budget analysis of groups of modal-type farms by type-of-farming areas. The AAA could very easily have financed this undertaking. What finally evolved from this is the highly restricted "cost and returns" project now directed by Wylie Goodsell. This is altogether too restricted to have any weight.

My final point is that inadequate as the parity standard is, it still has a hold in the agricultural public mind such that it cannot be treated simply as one of a list of indicators of proper price-support levels. When I wrote my *Parity, Parity, Parity* around 1940, I closed my introductory chapter by referring to Tennyson's dialectical poem about the old Northumberland farmer who in his life had by hard labor "grubbed Ornaby Waaste" and thus built up a landed property. This old farmer on his deathbed, in unison with the retreating hoof beats of a mare being ridden away, had uttered the refrain:

"Proputty, proputty, proputty,
That's wat I ears em saey"

I then said that if some of the farm leaders in the Congress of that day were brought to their death beds, the refrain which they might sing might well be:

"Parity, parity, parity,
That's what I hear them say"

Parity has lost some of its hold on the farmer public mind since that day. Still, the three bills being introduced for individual commodity-by-commodity programs in the coming Congress all set 90 per cent of parity as a standard—wheat, cotton, and dairy products. Will any other commodity bill introduced dare set any lower standard?

PARITY RE-EXAMINED[1]

By Oris V. Wells
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The Agricultural Adjustment Act of 1933 stated it was the policy of Congress among other things to:

(1) . . . reestablish prices to farmers at a level that will give agricultural commodities a purchasing power with respect to articles that farmers buy, equivalent to the purchasing power of agricultural commodities in the base period. . . .

(2) To approach such equality of purchasing power by gradual correction of the present inequalities therein at as rapid a rate as is deemed feasible in view of the current consumptive demand in domestic and foreign markets.

So runs the language which first formally defined the parity price standard. True, there have been several additions or amendments to the above language over the last twenty-five years, but the above simple statement still sets forth the two main concepts around which most arguments center; that is, how shall the parity comparisons be calculated and how firmly or to what extent should they be used as an actual operating standard?

Frankly, I intend to discuss chiefly the parity measurements as gen-

[1] Parity price calculations and their relationship to price support activities have been subject to more or less continuing re-examination for some time. See: "Material Bearing on Parity Prices," a statement presented by Howard R. Tolley, Chief of the Bureau of Agricultual Economics, before a subcommittee of the Committee on Agriculture and Forestry, United States Senate, July, 1941; John D. Black, *Parity, Parity, Parity* (1942); Oris V. Wells, "Agricultural Prices Following World War II," *Proceedings* of the American Farm Economic Association, 1944, and *J. of Farm Econ.*, Nov., 1944; E. J. Working, "Work of the Committee on Agricultural Price Supports and Their Consequences," *AEA Papers and Proceedings*, May, 1945, and Elmer J. Working, "Report of Ad Hoc Committee on Agricultural Price Supports," *AEA Papers and Proceedings*, May, 1946.

With respect to the parity measures themselves, Point 7 in the Committee conclusions indicated that "although the parity principle has much to recommend it as a general guide to agricultural policy, the use of parity prices for individual agricultural products or any fixed percentage thereof as a goal for price stabilization or other price influencing operation is unsound."

In discussing this conclusion, it was indicated that "the Committee recognizes the importance of having positive criteria to guide administrators. . . . It also recognizes and commends the principle of attempting to direct price policy so as to contribute to economic balance. Both of these are fundamental background reasons for the development of the present legally defined parity prices. Nevertheless, the Committee unanimously disapproves of parity prices as presently defined in law, or of any fixed percentage of those parity prices as a goal for price supports. We consider such goals to be inimical to the long-time welfare of agriculture as well as to the welfare of the nation as a whole." Also:

"On the Redefinition of Parity Price and Parity Income," a Committee Report, *J. of Farm Econ.*, Nov., 1947; "Possible Methods of Improving the Parity Formula," Report of the Secretary of Agriculture pursuant to Section 602 of the Agricultural Act of 1956, Senate Document No. 18, 85th Cong., 1st Sess., Feb. 1, 1957; "Price and Income Standards for Farm Programs," papers by Donald R. Kaldor, Oris V. Wells, and Geoffrey Shepherd and Associates, Chap. VII, "Policy for Commercial Agriculture: Its Relation to Economic Growth and Stability," Papers Submitted by panelists appearing before the Subcommittee on Agricultural Policy, Joint Economic Committee, Joint Committee Print, 85th Cong., 1st Sess., Nov. 22, 1957.

eral statistical guides or indicators rather than assuming that "parity" is an all-inclusive term which calls for an examination of the whole farm program as it has developed since the Agricultural Marketing Act of 1929.

I of course recognize that the term "parity" is a symbol to many economists of the whole farm program. Surely there are many questions which can be raised about the farm program as a whole or almost any one of its many facets. Such questions, however, have been widely discussed prior to this morning in many different forums, and I think we can safely assume will continue to be so discussed in the future. This being the case, there are only two comments which I want to make in this connection: First, we should remember that the farm problem as we now know it, along with sizable farm surpluses, developed during the period 1921-33 prior to the Congressional definition of the parity standard. Second, I think we should recognize that the English language is sufficiently flexible, statistics sufficiently plentiful, and the drive for farm relief sufficiently great that farm program activities would have proceeded in the past and will continue in the future whether or not they are related to the current "parity price" standard.

In fact, the Agricultural Marketing Act of 1929 contained no fixed reference scale or operating guide for stabilization activities. Nevertheless, the Federal Farm Board did soon manage to commit most of its $500,000,000 revolving fund in an effort to stabilize wheat and cotton prices, and there have been many farm activities since which have not been directly tied to parity prices.[2] We had surplus difficulties as an aftermath of World War I, as an aftermath of the Great Depression of 1929-33, and I think it fair to say that most informed agricultural observers expected difficulties of a similar kind as an aftermath of the all-out drive to maintain and increase farm production during World War II, regardless of the pricing standard to which that particular drive or postwar support standards might have been related.

Suppose we now consider the current parity price formula as a statistical measuring device, with some attention to various alternative or substitute calculations which are most often suggested.

The current "modernized" parity price formula has three moving parts: an index of prices received by farmers which measures average

[2] "The Board interpreted the intent of Congress to be the minimizing of such 'undue and excessive' price fluctuations as are injurious to the producers, and to eliminate the causes of such fluctuations. 'Not stabilization, in the sense of rigid fixation or leveling of prices, but stabilizing in the sense of limiting fluctuations, is regarded as the objective. Even this end is to be sought only in so far as it promises real benefits to farmers, not only for the time being but over a period of years.' The Act provided the Board, within its discretion, with a choice in the methods and machinery for attaining these ends."—E. S. Haskell, *Stabilization Operations of the Federal Farm Board* (Studies in Conflict and Control, Amer. Coun., Inst. of Pacific Rela., 1933).

changes from month to month, an index of prices paid by farmers (including also allowances for interest and taxes per acre of farm real estate and wage rates for hired farm labor), and the relative price experience of the several farm commodities during the most recent ten-year period.

Specifically, parity prices under the modernized formula are computed by dividing the average price for each farm commodity in the latest ten-year period by the average index of prices received by farmers in the same period on a 1910-14 base. This provides an adjusted base price which is then multiplied by the current parity or prices paid index which reflects the change in prices and cost rates paid by farmers since 1910-14.

These calculations give a set of parity prices which yield for all farm commodities considered together the same average purchasing power as prevailed during the base period for the price indexes—that is, 1910-14—while at the same time the parity prices for the individual commodities are gradually adjusted so as to allow for persistent or continuing market trends. In several cases, of course, the transition to the new or modernized parity as defined in the Agricultural Act of 1948 has not been completed.

The indexes of prices received and prices paid and the comparisons they make possible are among the most important statistics in the field of agriculture. These indexes would still be calculated and used as a basis for comparison even if they were not essential components of a legally defined parity standard. Similar indexes and comparisons are widely used in the analysis of changes in the level of wages, profits, and business investment. Such comparisons, however, only call attention to and assist in measuring the changes which are occurring. They do not themselves indicate why changes have occurred or what should be done.

Some of the suggestions most often made for new or different methods of calculating parity prices or comparable measures are; that the base period for the prices received and prices paid indexes be moved forward; that separate parity or cost indexes be used for each individual farm commodity; that parity prices should be adjusted to reflect increasing farm efficiency; and that some kind of a parity income measure be substituted for the current parity price formula.

Each of these suggestions is worth some comment. The current base period for the indexes of both prices received and prices paid by farmers is 1910-14. This base will soon be fifty years behind us and is of course subject to continuous criticism by both economists and statisticians. In fact, the chief amendment to the original parity price definition is the provision for basing the relationship between individual commodity parities on the relationships actually prevailing during the most

recent ten-year period (as provided in the Agricultural Act of 1948).

There are substantial statistical arguments for bringing the base period of the basic indexes to date, but we should also realize that such a change would not substantially—or if you prefer, not drastically—affect either the character or the level of the indexes or the parity prices themselves. Actually, if the recommendation of the Secretary of Agriculture to the Senate that the base period be shifted from 1910-14 to 1947-56 were adopted, the over-all effect would simply be to lower modernized parity prices as now calculated for each commodity by 2 per cent. Some other more recent bases would result in still lower parity prices, while some would yield even higher parities, depending upon the particular base selected.

The suggestion that separate parity or cost indexes be calculated for each individual commodity flows from the fact that the present parity or prices paid index is a measure of the average change in prices paid by all farmers in the United States for commodities and services used in both farm production and farm family living. Parity prices as now calculated are not "costs of production" nor do changes in the parity index necessarily measure changes in costs or cost rates for particular farm commodities. To me, at least, the use of separate cost-rate indexes for individual commodities or even related groups of commodities would mean a substantial shift away from the general purchasing-power, price-level concept on which the current parity formula is now based. Such a shift would lead to many requests for different bases, different methods of calculation, and allowances of one kind or another for special situations. Were this done, the end result would, I think, be a family of formulas which would probably yield prices or returns averaging well above those now provided under the current parity standard.

Preliminary calculations indicate that farmers are now using about one-fourth fewer inputs per unit of total production than was the case in 1940, and the recognition of this often leads to the suggestion that some kind of efficiency modifier should be developed. But nonfarm productive efficiency has also been increasing, certainly at as fast a rate as farm efficiency if short-run fluctuations are excepted. And if all nonfarm efficiency gains were passed forward to final end users or consumers, prices paid by farmers, and consequently parity prices for farm products, would automatically be lowered. There are also some other difficult questions relating to efficiency modifiers, including the question of satisfactorily measuring efficiency as well as the question as to whether such a suggestion is not simply a first step toward a commodity cost approach.

Finally, there are suggestions that some kind of a parity income measure should be substituted for the current parity price formula. These suggestions flow from two somewhat related considerations. On

the one hand, the farmers' basic interest is of course with income, not prices as such, while on the other hand statisticians and economists generally seem to feel that they could come closer to considering all the variables or factors which are necessary to satisfy their definitions of equity, or to arrive at a basis for an operating decision as the case may be, through the use of an income standard.

Generally there have been two main and, in terms of the actual results indicated, substantially different approaches to the problem of determining parity income. One involves the maintenance of historical income ratios which would allow farmers' incomes and standards of living to grow at the same rate as incomes or standards of living of the nonfarm group. Using such fragmentary data as are available from the base 1910-14, such calculations would indicate that per capita farm incomes have increased at about the same rate as average per capita nonfarm incomes into 1957; that is, that current farm incomes are at approximately such a "parity income" or ratio level.

A second idea calls for equal incomes or levels of living as between farmers and others. (In fact, parity income is currently defined in the Agricultural Act of 1948 as: " 'Parity,' as applied to income, shall be that gross income from agriculture which will provide the farm operator and his family with a standard of living equivalent to those afforded persons dependent upon other gainful occupation.") Such a standard as this would, again on the basis of such data as are available, indicate that current farm incomes are probably not more than about two-thirds of such an absolute parity income level.

While parity income definitions have now existed alongside parity price definitions for over twenty years, Congress has not indicated nor directed that the parity income concept be substituted for parity prices as an actual operating standard. In addition to the problem of deciding what income level is desirable, there would also be the problem of providing a formula for breaking down the desired parity net income as between farm and nonfarm sources, for allowing for the necessary farm operating costs in order to translate the desired net income from farming into a cash sales or gross farm income figure, and for deriving a set of commodity prices or area returns compatible with the income standard.

In general, aside from the proposal for shifting the base period for the prices paid and prices received indexes forward, these several suggestions for alternative or substitute parity calculations call for a more complicated approach than is now being used. Personally, I do not believe any of these more complicated formulas will yield a more useful set of comparisons or guidelines than the parity ratio and parity prices as now calculated.

This conclusion is not based on the fact that we are not interested in

the information which can be obtained by developing some of these alternative calculations. Rather, it is based on a preference for a general, systematic set of calculations as opposed to a more diverse, more detailed set of calculations for the purposes for which I think the parity standard has been and will likely continue to be used. Further, it seems to me that the parity standard as now defined is essentially a price-level concept which assumes that agricultural resources can and will be shifted from time to time "from those commodities which consumers least want to those which consumers most want" and that this assumption and the resulting flexibility is quite likely to be lost as we move to more detailed calculations which try to establish a specifically tailored objective for each commodity or each type-of-farming area or commodity group.

But why have parity indexes and parity prices at all? I suspect this was the basic question that was in the minds of those who arranged for this session. Certainly it is a good one. There are, it seems to me, two answers to this question, one of which relates to the problem as to whether we need a formally defined parity standard and the other to a much broader problem having to do with economic indicators in general and their influence.

We do of course have legislation providing for farm price supports and related activities of various kinds. Also the Congress does generally endeavor to define its objectives both in general terms and, wherever possible, partly because of arguments having to do with the delegation of power, to write more or less specific operating standards into legislation. We have now had a legally defined set of parity prices for almost twenty-five years, and we may well continue to have parity or some similar standard in the future. In any case, I doubt if we can escape the necessity for some kind of summary statistical measure or measures which summarize the movement of farm prices and incomes and which will in one way or another considerably influence judgments as to what should or should not be done.

As indicated earlier, the "moving parts" of the current set of parity calculations are all perfectly good statistical measures which would continue to be calculated and used even if they were not brought together and combined into a legally defined set of parity prices. As statisticians and economists, we are interested in and have actually had price indexes and related statistical measures of one kind or another, at least ever since the Aldrich report, for comparing the movement of farm and nonfarm prices at wholesale as well as estimating the trends in the prices of various farm commodities relative to one another. In fact, it was the existence and discussion of these kinds of measures among statisticians and economists which led the Congress to its basic definition of parity in 1933.

I have already indicated the reasons why I prefer parity calculations similar to those we now have rather than some of the substitutes most often discussed and in all fairness I should also say something about how such calculations might best be used. My views on this are quite simple: Statistics can help analyze problems or situations, but they can rarely be used as automatic guides for final decisions. Also, in the process of arriving at an informed judgment, we should always be free to look at as many different statistical indicators as may be appropriate. They do not have to all be rolled into any one single over-all index or calculation.

You will note that the Congress originally indicated in 1933 that they expected parity prices to be approached only "at as rapid a rate as is deemed feasible in view of the current consumptive demand in domestic and foreign markets." There is no escape from the basic fact that this is still the only reasonable rule, however the decision-making functions may be divided between the legislative and executive branches of the government.

Meanwhile, in closing I want to come to my second, more general reason as to why I think the parity price standard has persisted despite continuous criticism over the last quarter of a century and why I think we need to give increased attention to how such measures should be calculated and used. The plain fact is that economists over the last thirty-five years or so have successively and successfully sold the general public on the idea and necessity of maintaining a "balanced," "stabilized," and more recently an "expanding" economy and, as a corollary, have created a situation where statistical indicators or measures of various kinds are considered as essential tools of good economic management.

We know that our economy is complex and that imbalances or maladjustments should as a rule be detected as promptly as possible if they are to be corrected before the machine is wrecked. We are concerned about any number of balances or imbalances—the balance between consumption and investment, the balance as between agriculture, labor, and business (which led our presiding officer, John D. Black, to his well-phrased title, *Parity, Parity, Parity*), the balance between commodity prices, wages, and profits, the balance between exports, imports, and foreign aid, and the one which we discuss each day in the headlines of all the metropolitan dailies—the balance between government spending and income.

We have gradually developed the belief that we know and understand something about this whole problem of economic stability and growth, and we now have before us each month as a result of the joint efforts of the Council of Economic Advisers and the Joint Economic Committee the publication, *Economic Indicators*. If we are to devise and de-

velop a set of economic indicators to measure what is going on in the economy, I think it also follows that these same indicators must serve from time to time to influence judgments as to a whole series of economic actions which may or may not be taken, many of which in an economy as complex as ours will necessarily call for action at the governmental level.

I well remember a dozen years ago when the Hoover Commission Task Force set out to examine government statistics, sitting down across the table from a panel of well-known statisticians and economists one of whom (not the Chairman) started our discussion of the indexes of prices received and paid by farmers by asking, "Mr. Wells, wouldn't you have much better indexes and statistics generally if they were not used in arguing about or arriving at decisions in the farm program field?"

The answer of course is obvious. We try to develop statistical measures in order that people may know what is happening and in order that informed judgment may be taken where and when such informed judgments are necessary. This does not mean that all such judgments must be made within the government nor that we are not in favor of free enterprise. We are, but there are also times and places where if the basic framework of the free enterprise system is to be maintained, certain actions must and will be taken, especially in a country with institutional and governing arrangements such as ours. Almost all of our major indexes and economic comparisons are now part of the basic economic fabric of this nation, and whether we call these measures "parity" or not they do have an influence which they constantly exert in one manner or another. This being the case, it seems to me that the question of re-examining parity, looked at as a series of measures relating to farm prices and well-being, becomes chiefly one as to whether as economists and statisticians we have a better set of measurements to offer.

PARITY PRICE AND THE FARM PROBLEM: A CASE STUDY OF THE CONCEPT OF A SOLUTION OF AN ECONOMIC PROBLEM

By Rutledge Vining
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It does not strain one's imagination much to contemplate the possibility of the "farm movement" having taken the outward form assumed by the labor movement. During the early twenties there was strong support for legislation that would have sponsored the development of farm co-operatives designed to perform like tightly controlled cartels in the organization of agricultural production and marketing. Had this come to pass, we perhaps would not be cognizant of the "farm problem" in the explicit form in which we now see it. Consider what we might have had as analogues of familiar aspects of present-day organization of the supply and pricing of labor services: mandatory co-operative marketing in agriculture to correspond with the closed shop in the organization of labor; collective bargaining between the farm co-operative and industrial management in the setting of commodity prices to correspond with collective bargaining between the labor union and industrial management in the setting of wage rates; parity price in the agricultural contract negotiated by the co-operative to correspond with the escalator clause in the labor contract negotiated by the labor union; rules for the assignment of acreage allotments to the various members of the co-operatives to correspond with seniority rules, etc., for the allotment of hours to be worked by the members of the labor union; etc.

If all were tightly controlled so that only the allotted acreage could be cultivated and if the unallotted acreage were removed from the "acreage force" (corresponding to the "labor force")—by soil bank schemes, etc., to correspond with the shorter work week, paid vacation clauses, etc., in the labor contract—so that "unused" acreage would not show up in the statistics of agriculture, we perhaps would have no explicit indication of either "surplus" production or "surplus" acreage (to correspond with unemployment of resources in a specific industry). The prices of commodities (as well as the wages of labor) would be "fair" in accordance with the "parity price-escalator clause" criterion. The cumulating surpluses would not be there to puzzle and embarrass the legislators and administrators of farm programs. If unappealing features and anomalies of the working of the economic system emerged, they perhaps would not be explicitly attributed to these farm programs any more than to any of the other programs of restriction and control.

But while we perhaps would not observe the "farm problem" in the form in which we are used to seeing it, we as a national people would undoubtedly be cognizant of the existence of a crucial and most aggravating problem confronting us. It would be the problem that arrested the attention of Adam Smith himself: the cumulation of restraints and prescriptions of private actions, the press of a narrowing range of individual freedom. The evidences of what we think of as inefficiency and waste attributable to the organization of a specific field of activity would not be before us. But there would be other empirical evidence to induce within us an awareness that there is a problem to be solved.

If the above comments are sensible, we may be allowed to say that the actions that have been taken over the past thirty or so years have succeeded only in altering the form of the observations that induce within us an awareness of a problem to be solved. And we may take another step and consider as at least possible that if the advice of the many critics of the farm programs were followed—i.e., if price support and acreage control programs were abandoned—we should again succeed only in changing the form of the indications which induce in people the belief that something subject to their joint control needs fixing. That is to say, little progress has been made in the discussion of the problem, and the afore-mentioned advice of the experts—which has been as cogently presented in every year since the early twenties as it is today—has been consistently ignored by those responsible for the decisions that have been made.

Somehow, then, the political economist has failed in whatever efforts he has made to clarify the issues and to improve the quality of the discussion of the problem. And to repeat what has been repeated so many times before, viz., the cataloguing of the anomalies of the price and acreage control programs, would seem to be an ineffectual way of assisting in these discussions. And with this in view, I propose to consider the matter from a different angle.

I shall first consider the concept of economic problem and of a solution of an economic problem. By economic problem we refer to a kind of question which confronts a person who is engaged in making a choice from a set of alternatives. Two main types may be readily called to mind.

First, if a choosing agency has stipulated an end to be attained or a task to be performed and if there are alternative means for attaining the end or for performing the task, there is then a problem of selecting a particular means. The choices made by the management of a business concern or by a participant in a game are examples of decisions of this first type.

Now, an individual or firm is daily engaged in reviewing his previous

choices of means. He changes from time to time his designations of ends; and he reviews his previous evaluations of alternative means, for events occur that bring to his mind new possibilities not previously considered. However, when he exercises a choice upon any such occasion, he does so subject to what he understands to be physical and institutional constraints which are not alterable by his personal decision. But while not alterable by the decision of an individual acting independently from the point of view of his own personal interest, some of these constraints are subject to change by the joint action of the group or society of individuals. This is a second type of choice upon which the mind of an individual reflects. The individuals constituting a group or society jointly choose the constraints and regulations which they mutually impose upon their own individual actions. The choices made by a legislative body in the drafting of a legislative act or by the participants of a game in their altering of the rules of the game are examples of decisions of this second main type.

These are two distinct classes of phenomena: (1) an individual or coalition in the act of pondering the pros and cons of alternative strategic maneuvers any one of which would be a conceivable means for attaining an objective defined in the rules of the game; and (2) a group of individuals in the act of pondering the pros and cons of alternative sets of rules any one of which would specify a conceivable game in which as individuals they each intend to participate. These phenomena are observable in the sense that we can watch what people do who are engaged in either of these two types of activities and we can record what they say to one another in their explanations and in their respective appeals to one another's reasoning. The "thing" that is chosen is specific and concrete. In the case of an individual player of a game, that which is chosen is a set of rules (called a strategy) which prescribes an action for each situation that may possibly confront the player. That is, if we were to undertake to describe for the player the alternatives among which he may choose and to place upon a separate card a detailed specification of each of these things available for his personal choice, we could do no more than write out on each card a set of rules of action. Similarly, the thing that is chosen by a group of players is also a set of rules, and for this group we could prepare another set of cards, putting upon each card the rules describing a version of the game which the group might possibly adopt.

This distinction between the decisions that an individual makes as a player of a game and those in the making of which he participates as a member of the group of players who jointly act to improve the game applies analogously to the ordinary day-by-day decisions and expressions of choice made by any individual. The individual or the manager

of a firm makes his choice of actions within a system of constraints which are outside his personal control, and when he selects an end, he completes, so to speak, the specification of the game he is playing. He chooses a plan or programming of the operations under his control, just as the player of a game chooses his strategy; and a plan of operations is described by a system of rules of action, just as is a strategy.

A choice by an individual management of a programming of operations is analogous to a choice of a strategy by a player of a game, and there is a corresponding analogue for the choice by all the players of the rules of a game. The enacted and common law and the binding custom of a society constrain and command the actions of the individual members and place limits upon the possible plans of operation which may be chosen by any individual. It is this system of laws which is analogous to the rules of the game. Individual members of a society, through a legislative process, come to mutual understandings regarding modifications proposed for the improvement of the system of laws that constrains their individual actions, just as the players of a game engage in discussion and reach joint judgments to the effect that the game would be improved by proposed modifications of the rules of the game.

Consider now the concept of a solution of a problem confronting men in one or the other of these two situations. For the purpose of this consideration, let us raise to mind a comparison of two tables, around each of which men are gathered in the act of discussing a problem and in quest of a solution to this problem. At the first table, the men are engaged in choosing a procedure for performing a task for which they are responsible. There is a well-defined end, and the procedure which they seek is a component of an "instrument" constituting a means for attaining this end. This is the first type of problem to which we referred above; and the point of view of the men at this table we shall speak of as a "first-table" point of view. At the second table, the men are representatives of all members of the society, and they are engaged in choosing a system of constraints upon the private actions of all men, including such actions as those decided upon by the men at the first table. This is the second type of problem, and the distinctive point of view of men consciously and strictly engaged in this kind of discussion we shall speak of as a "second-table" point of view.

As an example of a first-table discussion, imagine a case involving several persons who are responsible for the selection and operation of a procedure for a manufacturing firm to use in order to perform some task. To be specific in our minds, suppose that it is a quality control system that is being discussed. Let us say that one of the persons reviews for the others how it was that the system presently used came to be chosen. He reminds them that prior to that time someone had noticed what appeared to be an excessively large number of lots rejected

by buyers. Someone else had informed the management of the experience of certain other firms in designing procedures for keeping quality within control limits, and he had recommended that a certain person who was supposed to know something about this sort of thing be consulted.

It is easy for us now to anticipate the kind of knowledge and analytical ability that this recommended person would possess. He would be a person, let us say, who had had the benefit of formal study and training in the field of mathematical statistics. In any event, this especially informed man had been engaged to study the situation, and he had immediately recognized that what the firm wanted designed was simply a special instance of a test of a hypothesis. He had helped the men specify in a precise way the objective of the system, and he and the men together had systematically classified all the distinguishable systems they could imagine that would attain this objective. They had then considered the matter of evaluating the alternative systems with respect to how well each would perform in the attainment of the objective. For this evaluation he had proposed, let us say, an adaptation of one of the criteria well known among mathematical statisticians. He had shown how a conceptual model of any of the possible systems may be analyzed in order to arrive at a prediction of the system's performance properties in practice, and he had demonstrated the choices that this criterion would prescribe in various kinds of circumstances. The men had been convinced of the completeness of the array of possible systems, of the reliability of the analysis for predicting the performance characteristics, and of the plausibility of the proposed criterion. The specialist had then applied a technique for finding that particular system of rules which this criterion would designate as best.

This is what had happened, and this problem confronting the firm had been regarded as solved. But later someone had noticed something else. The systems that had been considered as possible had all required an operator to draw periodically a sample of fixed size. An idea occurred to someone among those responsible for operating the system that suggested other possibilities. Suppose, he had said, that each of the items was drawn in sequence, each being inspected before the draw of the next. Somehow, he had suspected that if this were done a smaller number of items than was then being drawn in the sample of fixed size would suffice for the objective which they had outlined. The men are now seated around the table and those who think they have a glimmer of this new idea illustrate to the others how they are led to suspect that the idea has merit. As these men become aware of possibilities not previously considered, doubts arise in their minds regarding the "optimality" of the system that had been previously designated as best.

That is to say, these persons are induced by what they had observed

and by what they now hear to inquire into the possibility of improving the system of rules that they had previously accepted as satisfactory. They thus are confronted by a choice problem. Accordingly, they again engage the services of a person possessing special knowledge and analytical ability. The knowledge and the ability is of the sort, let us say, that one would have associated with a man like Wald. Developing the hints that had occurred to the practical users, this specialist conceives of a new class of systems and demonstrates by an analysis of a conceptual model that a design of a procedure based upon the new idea of sequential sampling may be expected to do all that the old system had been doing and at less expense; i.e., more efficiently. Being persuaded by this demonstration and explanation, the men undertook the risk entailed in adopting the proposed new system of rules in place of the old. Afterwards, the observed performance of the new system confirmed the predictions based upon the analysis, and their minds were again free of doubt regarding whether or not they had availed themselves of the best procedure for performing the task. The existence of this state of mind on the part of those responsible for making the choice marked the solution of the problem. The problem is a mental state; and the solution is a mental event.

And so it goes at this table. Observations of changing conditions, reflections upon possibilities not previously considered, observations of discrepancies between results and expectations, alterations of the point of view from which the objective had been seen—combinations of such observation and reflection on the part of the men around this table induce in their minds doubts from time to time regarding the optimality of procedures which they will have previously accepted as best. When the doubts are present, these men are confronted by a choice problem of our first type. When the doubts are resolved, the problem will have been solved.

Let us now consider the second table around which are gathered men in quest of a solution of a problem of our second type. The first type we regarded as analogous to the problem confronting a player of a game—either a single player or a coalition of several players—as he ponders the question of what to choose among the possible strategies available to him. The second type we looked upon as analogous to the problem confronting the group of all the players—members of all coalitions—as they consider the merits of a proposed modification of the game itself. All the players acting jointly exercise a choice between the rules of the game as they stand and the rules as they would stand were the modification adopted. In discussions of the first type, one would hear such words as "optimal" and "efficiency." As we may see, these words do not appear in discussions strictly confined to the second

type, but words like "fairness" and "inequitable" frequently appear—words that are not heard at the first table.

This latter would be a difference that we could observe, but there are other conceptual differences between the situations at the two tables. In the case of the first table, the men represent a decision-making agency that is striving to attain an objectively specifiable ultimate end; and with reference to this end, a task to be performed had been recognized and a procedure had been previously adopted for the performance of this task. Doubts had entered the minds of these men as to whether or not this procedure was working as well as some other procedure, of which they had recently become aware, would work if adopted. In the case of the second table, there is not an objectively specifiable ultimate end that the decision-making agency is striving to attain, and hence in the minds of the men representing the agency there should be no explicitly defined task to be performed. Rather than alternative means for attaining a defined end, these men should have in mind alternative systems of constraints upon private choices of ends and means—constraints upon such decisions as they might be making if they were the choosing agency represented at the first table. Nevertheless, just as in the case of the first table, doubts will have arisen in their minds upon the matter of whether or not the adoption of some other possible system of constraints is not called for. In these doubts regarding the acceptability of the existing system lies the awareness, on the part of the men at either table, of the choice that confronts them. The problem, again, is a mental state; i.e., to say that these men are confronted with a choice problem is to say that these doubts have arisen in their minds. A solution of the problem, just as at the first table, is a mental event, consisting of a resolution of these doubts.

Around this second table that we now have in mind are gathered legislators—agents who have been authorized to make a choice on behalf of the society of all individuals. They are discussing what they speak of as the farm problem. Empirical observations from new points of view and reflections upon newly recognized oversights of the past will have induced some or all of these men to inquire into the advisability of altering that which is subject to change by the joint action of all members of the society; viz., the system of legislative acts under which individuals make their private choices. There is a prodigious record of actual and verbatim discussion which has taken place at this second table. The record is available in the published reports of the hearings before the Senate and House Committees on Agriculture. I have studied verbatim reports of these discussions as a natural dialogue on laws.

Now inasmuch as I am interpreting the concept of problem as

referring to a mental state and the concept of solution as referring to a mental event, and inasmuch as the mental state corresponding to the farm problem has persisted over a long period of time, no solution having occurred as a result of all of the discussion, I have thought it appropriate to direct my studies to the discussion of a bygone time during which, as it appears to me, the conceptions and frames of reference were formed that have characterized the discussions of this issue down to the present day. I have selected hearings which were held in the early twenties upon proposed bills from which, or so it seems, contemporary agricultural legislative acts have descended. There would appear to be little or no difference between the conceptual scheme in the minds of those who conceived the ideas upon which the original McNary-Haugen bill and the auxiliary plans proposed by supporters of the competing Norris-Sinclair bill were based and that in the minds of those who drafted the legislative acts of the thirties and of recent years. The idea of parity price was introduced then, and one may regard the devices that were written into legislative proposals and enactments, subsequent to these early bills (i.e., export debentures, domestic allotments, nonrecourse loans, acreage controls, etc.) as largely of the nature of corrections of oversights of the designers of the earlier proposals or else as improved instruments proposed for the better attainment of the objectives for which the devices in the original plans were invented.

For our present purposes I have drawn upon the *Hearings before the Committee on Agriculture on S. 1642 and S. 2062, U. S. Senate, 68th Congress, 1924,* and the *Hearings before the Committee on Agriculture of the House of Representatives on H. R. 5563, 68th Congress, 1924.* The legislators whose inquiries and comments are reported are men whom the members of the national group have authorized to act on their behalf in the choice of a system of laws. The legislators had invited experts and observers of various sorts to discuss with them whatever it is that men are judging to be indicative of faulty performance of the system. Modifications had been proposed, and the legislators are engaged in reaching a joint judgment regarding (1) how the modified system would work if adopted and (2) whether this expected performance of the modified system would constitute an improvement over that which is currently observed.

There is not enough time for me to describe the proposed plans (the McNary-Haugen plan on the one hand and the Norris-Sinclair plan on the other), and I shall use what time there is to try to analyze the conceptions in the minds of the legislators and of those with whom the legislators are talking as these conceptions may be discerned in their discussions.

Chairman Haugen opened the House hearings by explaining to the members of the committee his understanding of the NcNary-Haugen bill. He repeated a statement that had been made many times: It is a well-known fact that prices of our basic agricultural products have not increased over their prewar prices in proportion to the increase in prices of all other commodities which the farmer must purchase. This is a matter of fact, observable in terms of defined variable quantities. But why should this be judged as indicative of faulty performance of an economic system requiring remedial action by those authorized to change the system?

The legislators' dissatisfaction with what they see stems, I think, from a conviction on their part that in the immediate past the monetary system had operated in such a manner as to wreak a terrible havoc among a quite large part of the citizenry, of such a magnitude that great numbers were being reduced virtually to peonage. Evidence for this is observed in the form of quantities, also, and these are the primary quantities in terms of which the faulty performance is seen: large numbers of bankruptcies concentrated within certain classes of people and within certain areas, large numbers of ragged and desperately poor people, large numbers of children who are not being educated. The observed discrepancy in the price movements of two different classes of commodities comes at a later stage—at the point where the bankruptcies are investigated: the persistent discrepancy between revenue and expenditure prevalent among a particular class of producing units. Mr. Gray Silver, of the American Farm Bureau, speaks in this vein:

> . . . And what does the farmer see when he starts to look for the causes of his embarrassing position? Two kinds of currency exist side by side in this country—the farmer's dollar and the other fellow's dollar. . . . The question resolves itself, therefore, into the query as to whether the people at large will agree to scaling down the profits of industry or labor, or whether they will agree through Congressional authorization . . . to the bringing up of the farmer's returns to a scale commensurate with the other classes. I have yet to hear anyone challenge the equity in the claim made by the farmer. (House, pages 390-391.)

To regard the trouble as that of the faulty performance of a monetary system is to interpret broadly the concept of a monetary system and the conditions determining the performance of such a system. These conditions would include tariff laws and the administrative rules pertaining thereto, the procedures by which the rates of supply of various products and services are controlled, the laws and institutions facilitating free control procedures, and so on. In the changes that had been brought about in these conditions, it was argued that a calamity had been thrust upon the inhabitants of vast areas of the nation. This seems to be the interpretation of Mr. Bernard Baruch, whose statement was included in the testimony. He asserted that "equality of

agriculture is what the farmer is striving for"; and then he explained what he meant by equality: "Other industries are organized and farming is not." The farmer is forced to buy in a controlled market where prices are determined "by the highest labor in the world and he is forced to sell in markets in which prices are determined by the cheapest labor in the world." Tariffs, patents, financial monopolies, etc., protect manufacturers against inflows of resources and against reductions of prices. Unions protect those with vested interests in urban and industrial jobs. Those who are denied the opportunity of selling their services to industrial enterprises emigrate so to speak to agriculture, which is essentially emigrating to the conditions of serfdom and peonage prevailing in many parts of the world with which agriculture competes. "Therefore," said Mr. Baruch, "it is only just that provision be made for the farmer doing what other groups are already doing."

He is clearly speaking now of unfair rules of a game, and he is considering ways of changing these rules that would render them fair. He goes on to say:

> The provisions of the McNary-Haugen bill will see to it that the farmer does what the other groups have been doing all along. . . . It will make co-operative marketing mandatory where it is now permissible. The price is not to be arbitrarily fixed by the farmer, but there is a minimum price determined by a proper relationship with all other things produced in the country, creating a proper relation between the results of labor in agriculture and the results of labor in other industries. Surely there is nothing unfair about that. There are some who may read stern economic lectures about this; but as soon as the principle of the tariff and of modern business organization is admitted, the correctness and propriety of this organization must be acknowledged. There is no arbitrary fixing of prices, but only a price that will create a fair and proper relationship between the labor engaged in agriculture and labor employed in other industries. The farmer will take care of the surplus and pocket the loss; the consumer will meet only the same conditions that he meets when paying for the other things necessary for his daily life, whether it be rent or clothing.

Now, what can Mr. Baruch mean by "fair and proper relationship"? I believe he is saying something like the following: Consider any two large collections of commodities, and calculate the relative change in the average of the prices for each of these collections. Then, if the monetary system is working properly, the relative changes of these two averages should be approximately the same. This proposition would be of the nature of a test of proper performance, and it would refer to another dimension of the stability of the value of money. We ordinarily think of stability in terms of the size of the variation of an average of the prices of all goods and services. But I believe that back in our heads there is a recognition of another aspect of the concept; viz., the dispersion of individual price changes. In general, somehow in our subconscious, we require that the form of the frequency distribution of individual price changes be not too unusual without explicitly having in mind what the normal form of this distribution is. We may require this in order that conditions of stability may be regarded as satisfied.

The average of all price changes would be one parameter of the distribution. Some measure of dispersion would be another. And for large groups of commodities randomly drawn, the respective averages and dispersions, we somehow say, should be approximately the same. Now, let us say that he argues that a systematic classification between agricultural and nonagricultural production should yield essentially a random drawing of two sets of qualities and characteristics that determine individual price changes. Changes of technical productivity of labor and capital will vary among different commodities and services, but for any such large groups the average change should not be importantly different. And there should be such freedom of movement of resources from the less to the more remunerative uses that average price changes should be approximately the same in the two groups. At any particular time, the value of the product of an added unit of labor in the one class of activity should be approximately the same as in the other. This is Mr. Baruch's "proper relation between the results of labor in agriculture and the results of labor in other industries."

But, he says, this is evidently not the case. One observes not the similarity of variation in the two groups but a steadily increasing discrepancy between the two averages. Something is wrong with the monetary system. As Mr. Silver said:

> And what does the farmer see when he starts to look for the causes of his embarrassing position? Two kinds of currency exist side by side in this country—the farmer's dollar and the other fellow's dollar.

There is not the freedom of movement of resources from one activity to another. The farmer is not permitted to buy in the same markets in which he sells his products. Laws and financial arrangements are such as to prevent resources from moving into the relatively remunerative industrial production. High tariffs keep out foreign resources; labor unions, patents, etc., keep out domestic resources. What Mr. Baruch has in mind, I think, is an argument somewhat similar to that regarding the conditions under which a nation can benefit from a tariff at the expense of her neighbors, except in Mr. Baruch's case, it is not a nation but rather a class within a nation—vested interests in organized labor and in manufacturing enterprise—which benefits by various restrictive devices at the expense not of another country but of another class of individuals—those engaged in unorganized activities.

To Mr. Baruch, this is unfair, on the principle that there should be no special interest legislation restricting the freedom of one class on behalf of the interests of another. He would be impatient with the "stern economic lectures" that end with admonitions to the effect that if a person finds that he cannot make ends meet with his resources in present uses he is free to move these to more remunerative uses.

This admonition, he would hold, is based upon an invalid interpretation of what can be observed. There is not a real misallocation of resources. The difficulties are monetary rather than real, and legislation and policy actions of the past have set in motion changes of conditions that are expropriating the property of more than one-third of the families of the nation.

Mr. Silver had referred to two alternatives for correcting the system: a "scaling down" and removal of the constraints that are said to be advantageous to one group; or "putting the farmer up on a comparable basis with other industries." The latter is called "equalizing the farmer with the other fellow." Mr. Baruch presumably did not regard as feasible the repeal of tariff and other restrictive legislation. Indeed, he apparently thought he saw merit in a cartel form for the organization of the activities of the population of a nation. "As soon as the principles of the tariff and of modern business organization is admitted," said Mr. Baruch, "the correctness and propriety of this organization [the McNary-Haugen "machinery"] must also be acknowledged."

At this stage, I think there was a shift in the point of view. Throughout the inquiry and review of the performance of the system of laws, there was maintained the second-table point of view. But there came a time when some of the witnesses and legislators began to identify themselves with one side of a contest the conditions of which were taken for granted. "Raising the farmer's selling price up to level of the ratio price" became an end for which a means was being sought. This is a first-table point of view. The second-table question has only to do with establishing the conditions of the contest itself, and we may see how the adoption of a first-table point of view essentially begs the larger question.

When Mr. Brand, the marketing expert of the Department of Agriculture, was asked to tell "in whose brain this plan originated" (i.e., the McNary-Haugen plan which introduced the idea of parity price), he referred to Mr. George N. Peek and General Hugh S. Johnson and credited them with developing the "principles underlying the plan." By "principles," Mr. Brand means, I think, the idea of differentiated markets and price discrimination. Mr. Peek and General Johnson had had experience with the operation of a particular strategy or policy that had been adopted by firms within the farm implement industry. Someone long ago had seen how, with legislation which suitably restricts the freedom of individual action, markets could be isolated from one another and a pricing and output policy followed that yields a higher "payoff" for the adopters of this policy than would be the case if the markets were not differentiated. The idea occurred to Mr. Peek and General Johnson that these other men, with

whom their business was in closest contact, might also enjoy the benefits of this excellent plan of operation; and they proposed that the rules of the game be changed in such a way that a strategy might be adopted on behalf of the existing farmers, organized as a single operating unit, similar in form and intent to that employed by the John Deere Company or the International Harvester Corporation. Secretary Wallace had remarked:

> I have no doubt but that many people who have been favorable to this plan have had in mind the success with which some industries have been able to market their surplus and get it out of the way. (House, pages 372-373.)

Mr. Brand indicated that it was he who was largely responsible for the details of the plan. The details have to do with the specification of the rules constraining and prescribing individual actions. These rules are of two kinds. On the one hand, there are rules of the nature of a strategy to be followed by a participant in a contest: for example, the rules of action prescribed for the managers of the Export Corporation. On the other hand, there are rules which if adopted by the legislators would change the conditions of the contest itself in such a way as to render practicable the operation of the particular strategy: for example, the stipulations with respect to tariff adjustments. An altered "game" was being proposed in which the freedom of all individuals is more restricted than would be the case without the new legislation.

Secretary Wallace repeatedly expressed his conviction that any effort to change the rules in order to attain an objective of this sort (viz., to make possible the operation of this strategy of market differentiation and price discrimination) will certainly fail to anticipate possible responses that might later be seen to require additional restraints upon individual actions. For example:

> Yes, I do not think anyone can follow those things through to their ultimate effect in advance. There is no question but that a lot of difficult problems would come up that would have to be interpreted in dealing with a question of this kind, which involves a great national policy. They would simply have to be worked out one at a time. (House, page 117.)
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> . . . . . .
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> I would not want to say whether it is workable in the case of every farm crop or not. I will tell you my approach to this. I have come to the point where I want to take the affirmative attitude and try to see how it will work, instead of trying to find out why it won't work. (Page 118.)
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> . . . . . .
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> Just go right down the line and you bring up all these interminable difficulties. My view about these matters is that there are innumerable details of administration that cannot possibly be anticipated, but they will have to be met with as you come to them. (Page 123.)
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> . . . . . .
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> Senator, you are dealing with a problem here of almost inconceivable magnitude and difficulty, and I don't see how you can work out all these details and express them in the law. The first question is to determine whether we want to do this. Is it right and just and fair not only to the farmer, but to all the people of the country that that should be done, and if you decide that, then the question comes up how are you going to do it, but when you get into that question you are launched out onto a program of extreme

difficulty, but if you once decide you want to do it and take the affirmative and say we might find some way to do this, then many of these troubles will disappear. (Senate, pages 371-372.)

But it was the ambiguities in this question put by Secretary Wallace with which the congressmen were preoccupied, I think, in their questioning of him:

The first question is to determine whether we want to do *this*. . . . Is it right and just and fair not only to the farmer, but to all the people of the country that *that* should be done; and if you decide that, the question comes up: how are you going to do it?

There is an ambiguity in the meaning of "this" in "whether we want to do *this*" and "that" in "that *that* should be done" which confuses the discussion. To the congressmen, "this" refers to the particular draft of a proposed bill to alter conditions of individual action. By question and answer they seek to get before them a description of how it will work. The questioning and answering corresponds to analysis leading to a prediction of the performance of a system of constraining rules. They have nothing to decide until a description of expected performance is before them, for the decision is a choice between the performances of alternative systems. But to Secretary Wallace, "this" would seem to mean something less concrete. "In brief," he says, "the plan which this bill undertakes to put in concrete form is directed toward trying to re-establish a fair relationship between the prices of the things the farmer sells and the prices of the things he buys." (Senate, page 350.) "This," as Secretary Wallace uses it, refers to the clause beginning with "to re-establish." He asks the congressmen first to decide whether they want to re-establish a fair relationship between prices, which question of course answers itself. "Thinking men," he says, "spoke of the disparity between the prices of agricultural products and the prices of other things and of the need being to bring about a proper relationship"; and he asked the congressmen to decide first whether they want to do "this"; i.e., "to bring about a proper relationship"; and of course the congressmen do. "The intended effect would never be to put the consumer at a disadvantage with the producer. The [intended] effect is to preserve a fair relationship between the two," and he asks the congressmen if they are in favor of "this"; viz., "preserving a fair relationship."

What I believe Secretary Wallace is doing in his mind is this: he allows himself to identify fair relationship or proper relationship with "proportional change since 1910-14." This then defines an end. If the congressmen decide that this is what they want to do, then he recommends the bill in question as something to try as a means to that end, readily expressing the expectation that many more restrictions will have to be imposed as experience is gained in the management of the plan.

But at least the questions of some of the congressmen suggest that they hold a different conception of a congressman's function. They do not decide merely between alternative means for maintaining a proportionality among the changes of the averages of prices of groups of commodities. They agree that such large differences as they were observing seem highly unusual and call for inquiry. But the choices that congressmen make have to do, not with alternative means for stabilizing a fixed relationship between two calculations, but with alternative conditions under which individuals live their respective lives. Secretary Wallace said:

> I think you can state the principles of the McNary-Haugen bill in this way, that it undertakes to do and contemplates doing what anyone of us would do, instinctively, as business men, if we were producing all the wheat in the United States and had the authority to set up a tariff that would hold up the domestic price and allow us to get rid of our surplus in the markets of the world. It is a principle that has been applied by industry at different times, and I think with some success.

Congressmen might well have responded to this by pointing out: that Secretary Wallace is proposing to create a single individual who will behave as though he raises and owns all the wheat in this country and under such circumstances that American consumers are unable to find alternative sources of supply; that in fact the created individual will not raise and own the wheat and as matters now stand consumers have access to alternative sources of supply; that in order for this single individual to act as though the other was the case, all individuals who are now free to do as they choose with their resources and who are free to buy from whom they please must forego this freedom of choice; that the actions of all these millions of actual individuals must be so constrained as to conform with the requirements of this single created individual; that the question for the legislators to consider is not what this single individual might do (i.e., what strategy he should adopt) in order to maximize his payoff as a participant in a contest, but rather what these new constraints will do to the contest itself (i.e., what sort of game the new game would be).

Congressman Voight engaged in this kind of interchange with a Mr. Jewett, a representative of a farm organization. He attempted by question and answer to adduce the performance characteristics of such a system as that implied in the McNary-Haugen plan. Mr. Jewett, like Secretary Wallace, seemed to have allowed the problem to settle in his mind as a means-end problem. "Help the farmer" had become "raise farm prices to the extent of the proportional change in an index of nonfarm prices since a specified date." This being the end, he recommends, just as did Secretary Wallace, that we meet the difficulties as they arise and introduce additional restrictions as they are seen by experience to be necessary. But Congressman Voight did not see fit to

do that. Until he had some conception of the constraints that would be found necessary, he was not in a position to make a choice; for the choice is between alternative systems of constraints. Upon analysis and comparison, he may conclude that "proportionality of price changes," coupled with all the restrictions of freedom that are entailed by any known procedure for attaining this proportionality, does not help the farmer. He easily demonstrated that the drafting of the bill as it stood had nowhere near been completed. This was readily admitted by Mr. Jewett and Secretary Wallace, who proposed that difficulties be met as they are encountered. But this did not appeal to the congressman, who did not conceive of himself as seeking a means to an end. He must know what constraints are to be imposed and how the alternative systems of constraints will respectively perform before he, as a participant in a second-table discussion, is confronted with a choice problem at all.

Yet this is the course that the discussion has taken throughout these thirty-odd years. Men at this second table lapsed into a first-table point of view. An end gradually came to be defined in the minds of these men: the raising of the average of the price relatives of one set of commodities to a value approaching that of another set of commodities. This being the end of what these men came to conceive as the organization on behalf of which they were acting, they took the pragmatic view urged by Mr. Wallace: to proceed as best they might, meeting the difficulties as these were encountered. But this "working out the difficulties one at a time" consists of imposing additional constraints upon the freedom of individuals; and the preoccupation of the men at this second table, and of the specialists who advise them, with the designing of means to attain this end has led to a neglect of the essential second-table problem: the choice of constraints upon individual actions.

There was a time during these early discussions when one might have hoped that the other course would be taken by the legislators. One can imagine that a man with the point of view and capacities of a Henry C. Simons would have contributed powerfully to the improvement of the quality of the discussions at this second table at that time, and he would have found a sympathetic audience. Against the prospect of new restrictions imposed on behalf of agricultural interests, the legislators contemplated a program of removing the mercantilist restraints and controls that had previously been imposed on behalf of urban industry and organized labor. The legislators contemplated an alternative legislative program whereby the system of enactments would be changed "so that we go out of this favoring business entirely." There were concrete proposals that would have made a small beginning.

For example, a Mr. Manahan, a former congressman and speaking on behalf of the Equity Co-operative Exchange, opposed the McNary-Haugen plan and favored the Norris-Sinclair bill. A congressman asked him if it was his understanding that the commission to be established by the Norris bill would raise the price above the market price. Mr. Manahan said:

> Not above the market price, if the true use of that word is considered. The market price is the price on a market uncontrolled by either legislation or otherwise and unaffected by monopolistic influences. If the markets of the world were left untrammeled and unrestricted by tariff legislation, and there was no monopoly control in the market places, I would say the market price would be fair, but now the farmer is compelled to sell in a bankrupt world and buy in a controlled domestic market. . . .
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> It is within the power of Congress to prevent special interests taking advantage of world prices for their advancement at the expense of another class. Yesterday, when I was before the Senate Committee, Senator Norris asked me to suggest an amendment that would serve the purpose of automatically protecting the Corporation [which the bill establishes] from loss, and I attempted to do so, and my amendment is as follows:
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> "(5) To invest the proceeds received by it from the exportation and sale of agricultural products without the U.S. in foreign goods generally used or consumed by farmers whose products are so exported and sold, and import the foreign goods so purchased free of tax or duty and sell the same at cost delivered to consumers of the States wherein the products so exported were produced."

This was a positive proposal by men speaking on behalf of citizens whose activities at the time were devoted to farming. By what they observed these men were induced to the belief that there was something definitely wrong with the game as it had been gradually modified by legislation of the immediate past. This proposal had to do with only one aspect of the system, and there were scattered suggestions from other quarters; e.g., there was much criticism of the monetary and banking system, the tax system, etc. Indeed, the positive and comprehensive legislative program outlined by Henry Simons (*A Positive Program,* etc.) seems but an elaboration and extension of what was in the minds of many legislators and many critics of the system who appeared before the committees. We may recall that it was a positive legislative program which Adam Smith conceived when he reviewed and analyzed the system of constraints that had evolved in his day. But we have come, it seems, almost full turn since Smith's day back to the mercantilist system of constraints and controls which was the subject of his criticism. What a pity that during the early twenties these men at the second table who were striving to understand the terribly important problems of social and economic organization did not have the active assistance and encouragement of political economists in the tradition of Smith.

DISCUSSION

VINCENT W. BLADEN: Professor Vining has discussed the hearings prior to the adoption of the parity price policy as concerned with revision of the rules of the "economic" game. He finds the discussion unsatisfactory in the failure to define the criterion of a good game, and to analyze effectively the probable results of the game when played according to various possible rules. (At least this is the impression I get from some 120 pages of typescript submitted in lieu of the pages read today.) The approach is novel and I may not have understood; but there seemed to me to be an air of unreality about it. No one reading this account of the hearings would guess that votes counted as well as prices. Should we not consider the hearings as a game the object of which is to be re-elected and thus to be allowed to continue in the game? Do we not then need to examine the "problem" as it appears to the individual voter, and to consider the "solution" in relation to his prejudices, superstitions, and general ignorance? Neglect of this aspect is the most serious weakness that I detect in Professor Vining's paper. A second weakness lies in his refusal to consider anything but explicit statement. Surely much could be, and was, left unsaid because it was recognized as implicit. The implied judgments should be explored if the hearings are to be understood; and particularly is it necessary to identify the different implicit values of participants in the discussion who assume that no such differences exist.

I confess to some dissatisfaction that the re-examination of parity has led neither of the speakers to tell us how it has all turned out. I turned from Mr. Vining and the hearings of the twenties to be told by Dr. Wells that economists have sold the general public on the "idea and necessity of maintaining a 'balanced,' 'stabilized,' and more recently an 'expanding' economy" and "have created a situation where statistical indicators or measure of various kinds are considered essential tools of good economic management." Surely the economists have had something to say, too, about the proper allocation of resources, and the need for flexibility and adjustment. Statistical indicators may be essential tools, but surely their proper use requires some definition of objectives and some analysis of the probable results to be achieved by using them. Dr. Wells says the parity calculations are useful "measures in order that people may know what is happening." But the measures do not tell us what we should do, and it is this problem of policy which must surely concern us.

A Canadian looking at this policy from outside and in the absence of any examination of the record, which might have modified his judgment, is inclined to say that only a very rich country could afford the misallocation of resources apparently involved in the agricultural policy of the United States, and only a very powerful one could ignore the effect of this policy on its neighbors and its allies. What parity suggests to me, in other words, is surplus farm products and the difficulty we experience in selling wheat in competition with a country which dumps and gives away its surplus. What worries me

just now is that the Canadian government seems to be blundering into the same morass. You have helped materially to create our difficulty and then you contribute this "solution": we borrow your ideas and ignore your experience!

If we were not given an examination of the record, we might have hoped for a consideration of the theory. In what kind of economic model would parity between agricultural and manufactured prices be a symptom or a condition of health? In such a model how would such parity be established? Is it imposed parity or parity resulting from a free market that would be the mark of health? What appropriate action could be taken to alleviate the pain of adjustment without inhibiting it? How like our world is the model so set up? Is it impossible, or just useless, to discuss the farm problem?

Finally, I would ask whether there is a single farm problem as such, or whether there are not really a series of problems requirnig separate analysis and separate treatment. I would identify three classes of problems amongst many: first, a decline in the income of some farmers from previously satisfactory levels associated with a general economic recession, to be corrected by general economic recovery and temporary support; second, low earnings of farmers in a high employment economy resulting from overproduction of a particular commodity, to be corrected by reallocation of resources, with temporary support and aid in adjusting; third, low earnings of inefficient, ill-equipped farmers, to be corrected by raising their productivity in agriculture, or by raising their potential productivity in industry, or, hopelessly, by direct relief. Even in the United States there are, I gather, underdeveloped sectors; and there is something to be learned for your own national policy from the new attention being paid to the economics of development. It may not be the best "vote catching" move in the game, but in terms of addition to the national income and in terms of the most poor people made richer, direct attack on the underdeveloped sector of United States agriculture seems to me the strategy worthy of choice. This involves more imagination than parity, parity!

Elmer J. Working: Mr. Wells and Professor Vining have given us two stimulating papers. Beyond that, and the fact that both relate to parity, I find nothing that is similar in the two or in the materials sent to the discussants prior to this meeting. Mr. Wells sent a 14-page paper; Profesor Vining supplied a manuscript of well over 100 pages. The differences in character of the papers are as great.

Mr. Wells's paper seems, on the whole, to be a defense of parity as it is defined by law and is currently measured. It is, nevertheless, difficult to pick out specific and pertinent points of defense. His defense is more by implication than by specification. With regard to legal definition, he indicates (1) "that the farm problem . . . developed . . . prior to the Congressional definition of the parity standard" and (2) "that farm program activities would have proceeded . . . and will continue to proceed . . . whether or not they are related to current 'parity price' standard."

While these statements are true, they do not constitute any justification for parity having been defined as it was by the law, nor do they in any way

indicate that the adoption of that parity as a goal of policy had favorable rather than unfavorable results, either for farmers or the nation as a whole. Certainly, the farm problem developed before a law was enacted to deal with it, and before that law contained Congress' definition of parity!

The general concept of parity had been developed more than a decade before 1933, and this concept had much to do with the way people were led and misled in their thinking about what should be the objectives of agricultural policy. Furthermore, the adoption of the parity principle by Congress and the definition of parity contained in the Agricultural Adjustment Act of 1933 and in subsequent acts has had much to do with the specific steps taken in the administration of those acts. In short, both the successes and failures of our agricultural policies and programs over the past quarter century are very largely due to the parity concept and its definition in law.

". . . because he who enlists a man's mind wields a power even greater than the sword or the scepter, these men shaped and swayed the world." So says Heilbroner in *The Worldly Philosophers*. While by no means all of us attribute so great importance to the power of economic ideas to shape events, I doubt that any one here believes that economic ideas do not have great power. The idea that parity—measured in the various ways it has been defined by our laws—constitutes an approximation to fair, just, and economically desirable prices for agricultural products has been a very powerful force in our political and our economic life for more than a third of a century. In some instances and at some times, the idea has been substantially correct. In other instances and at other times, it has been seriously in error and has been a detriment to the welfare of agriculture and the nation as a whole.

Mr. Wells implies that because the measurement of parity involves the use of good and desirable indexes this somehow makes the present definition of parity good and desirable. But he does not actually say this. Instead, he says that he prefers "parity calculations similar to those we now have rather than some of the substitutes most often discussed," and that, "almost all of our major indexes and economic comparisons are now part of the basic economic fabric of this nation, and whether we call these measures parity or not they do have an influence which they constantly exert in one manner or another. This being the case, it seems to me that the question of re-examining parity, looked at as a series of measures relating to farm prices and well-being becomes chiefly one as to whether as economists and statisticians we have a better set of measurements to offer."

These are slippery words. True, our economic comparisons have an influence no matter what we call them, but when people call a certain index a "parity index" and certain prices "parity prices," that index and those prices have a different influence than if they were called by more appropriate and accurate names.

Mr. Wells says that the indexes of prices received and prices paid "would still be calculated and used as a basis for comparison even if they were not essential components of a legally defined parity standard." Substantially true, but their base would be different! I suspect that if the decision had been left

to economists and statisticians, the base would now be the five years 1935-39. Furthermore, if economists and statisticians had the choice, I suspect that the index compared with that of prices received would be of prices paid for commodities only—that it would not include interest, taxes, and wage rates. With these changes, the ratio of the index of prices paid to prices received for the year 1956 would have been about 103 in place of the parity index of 82 as currently computed!

In view of this, how can Mr. Wells justify his statement: "There are substantial statistical arguments for bringing the base period and the basic indexes to date, but we should also realize that such a change would not substantially affect either the character or the level of the indexes or the parity prices themselves." (This quotation is from the paper sent to discussants. In the paper as read, the word "substantially" was followed by, "or if you prefer, drastically.") The slight difference which Mr. Wells indicates would result from a change of base from 1910-14 to 1947-56 is no evidence that changes to other bases would result in similarly slight changes.

Of course it is altogether possible that if the economists and statisticians had their way we would now be using the 1947-49 base for indexes of prices received and paid by farmers. However, I know of no reputable economist or statistician who would claim that period to represent a balanced relationship between prices of agricultural and other products. I suspect that if it were not for all the background of political pressures relating to parity or equality of agriculture, we would within a few years have our indexes of prices received and prices paid computed on a base period of either 1951 to 1955 or 1955 to 1959.

I quite agree with Mr. Wells when he says, with regard to comparisons of indexes: "Such comparisons . . . do not themselves indicate why changes have occurred nor what should be done." However, attaching the word "parity" to an index or a ratio does carry an implication of what result should be accomplished by an agricultural program!

The significance of parity as it appears in the various agricultural acts of the past quarter century does not lie only in how it is defined. What is more important is that parity, so defined, is adopted as a goal of agricultural programs. In an economy of competitive private enterprise, prices are commonly held to have a function. Changes in prices likewise have an important function in a dynamic economy. But parity prices, when measured in dollars of constant purchasing power, are essentially fixed, unchanging prices. This was true commodity by commodity before the days of flexible parity. Now it is true only of the average level of parity prices of farm products.

If we fix or freeze prices at an unchanging level, what does this do to the ability of a system of competitive private enterprise to govern itself? Does not such price fixing destroy much of the mechanism by which the self-interest of enterprisers is kept within bounds and made to serve the interest of general welfare? Do we not thereby tend to force ourselves to a system of authoratarian control of economic affairs and to a nondemocratic political system?

It is, of course, well known that much of our private enterprise economy

operates on a basis where production adjustments are largely directed through means other than price change. Perhaps prices are determined—in the short run, at least—by administrative action of a firm which is accepted as price leader for the industry, and all firms adjust their production to whatever volume they can sell at the administratively determined price. Production of all firms may even be progressively reduced at a time when, because of a falling price level, real prices are rising. Quite aside from whether this type of production control is socially desirable or undesirable, it requires a different type of industry organization from what is present throughout most of agriculture.

If we fix prices or otherwise seriously interfere with the changes of prices which would take place through competitive private enterprise operating under the accepted framework of "rules of the game," we destroy the effectiveness of the price system to perform its function. This should not be done in any sector of the economy unless we have a means for allocating resources which is better than the price mechanism. Furthermore, if and where such a better means does exist in agriculture, should not its establishment rather than something called "parity" be the goal of agricultural policy? The main reason that the adoption of parity prices as goals for agricultural programs has not been more disastrous is that, for the most part, the goals have not been attained.

I hope that I shall not be misunderstood in saying that the adoption of the legally defined parity prices as goals for action programs has been a mistake. It is well and good to have as a goal of public policy the fair and equitable treatment of agriculture in every respect. It is thoroughly desirable to compile and disseminate economic information, including index numbers, ratios of index numbers, and other "economic indicators." It is good to have them used, not only by private enterprisers to guide their decisions, but by Congress and other public agencies as guides for developing institutional changes in the hope that we may thereby improve the operation of our economic system. But I believe it is a mistake of the worst kind for public action to freeze an essential part of the economic mechanism on which enterprisers in agriculture depend to direct and co-ordinate their activities in a dynamic economy. The seriousness of the mistake is in no wise mitigated if the majority of the enterprisers most directly affected favor such action because of the short-run benefits it will bring them.

Let me now turn to Professor Vining's paper. I am handicapped in discussing it, partly because I lack competence in the theory of games and partly because as I am drafting this discussion I have not seen the paper but only the hundred-odd pages of manuscript.

I find Professor Vining's approach very intriguing. Furthermore, I believe he has satisfactorily made the point that if the "farm problem" is to be considered as a problem in connection with the theory of games, it is a problem of the second sort: of changing the rules. However, I have some doubts as to the practical usefulness of viewing the farm problem as a thing to be dealt with in the light of the theory of games. In the first place, the farm problem is no specific problem at all. Rather it is an area in which there are continually

arising and passing out of existence a galaxy of problems for the various people engaged in or interested in agriculture. It is no more a single problem than is "the problem of life."

As to parity price, would it not be more realistic and probably more productive in any application of the theory of games to consider it as a component of a proposed solution to the game of politics? In this game each politician is faced with the dual problem of getting himself elected and of helping to get others of his group elected. The actions of politicians in voting upon and in discussing parity price are perhaps best viewed as a part of their attempts to solve these problems.

CRITERIA FOR CAPITAL INVESTMENT DECISIONS IN THE USSR

INTRODUCTION

By Morris A. Copeland
Cornell University

Although Professors Khachaturov and Aboltin were unable to present their papers at Philadelphia, it seems appropriate and desirable to print them here. It may be in order, too, to include in this introductory note two comments I had expected to make in introducing our guests from the Union of Soviet Socialist Republics.

First, I had hoped this Soviet economics session, together with the informal contacts planned for Professors Khachaturov and Aboltin during their two weeks' visit in the United States, would represent a significant step forward in international understanding between the East and the West. Moving forward on this front is vital at the present juncture in world affairs, and it involves among other things developing contacts between scholars of the East and scholars of the West, and in particular between economists. I had hoped Professor Khachaturov and Professor Aboltin would be able to give international understanding a good push forward while they were here.

Second, I had hoped their visit might have a more specific, technical significance. When intellectual inquiries on the same general subject are being pursued in different countries, cross-fertilization of ideas is commonly profitable. Surely this must be the case with inquiries in the field of economics. And if I may record my own impression of the present status of economics in the United States, it is this: our economic theory insists on the meritorious features of our free enterprise system and rightly so, but that does not mean that we can wisely continue to be surrounded by an ideological curtain. If in macroeconomics we have made rapid strides of late, in microeconomics we have made little progress toward more realistic hypotheses during the last twenty-five years. I believe an outside stimulus might be very good for us. I had hoped that the visit of Professor Khachaturov and Professor Aboltin would help to stimulate an effective cross-fertilization of ideas.

The expected contacts were destined not to become realities. But perhaps printing the two papers here will do something both in the

direction of an improved international understanding and in that of stimulating a cross-fertilization of ideas.

In order to make this section of the *Proceedings* conform as closely as possible under the circumstances to usual Association practice, after receiving the manuscripts from Moscow in January, I invited Professor Holland Hunter to comment briefly on Professor Khachaturov's paper and Professor Frank Golay to comment briefly on Professor Aboltin's.

THE ECONOMIC EFFECTIVENESS OF CAPITAL INVESTMENTS IN THE USSR

By T. S. KHACHATUROV
Corresponding Member of the Academy of Sciences of the USSR

In the USSR large investments of capital are made annually in all branches of the national economy. In the period from 1929 to 1956 the over-all capital investments in the country amounted to 1,613 billion roubles (in fixed prices), including 980 billion roubles in industry. Apart from this, the capital investments of collective farms were 151 billion roubles.

The purpose of capital investments in a socialist economy is to expand the fixed funds of industry, agriculture, and transport. This provides for the equipment of labor with new improved instruments, or allows for the increase in their number and for enrolling new workers. These expenditures are aimed at an expanded scale of production, at increasing the national product in order to bring about a steady rise in the well-being of the people and the satisfaction of their rising material and cultural requirements.

Increase of production largely depends on the amount of capital invested. The latter in its turn is dependent on the national income for the preceding period, and on the accumulation-consumption ratio controlled by the plan. At present this ratio in the USSR is about 25 to 75. The accumulation ratio determines also the over-all amount of capital investments and, consequently, the rate of production growth in the following period.

The effectiveness of capital investments in the entire national economy can be assessed through the ratio of the net product (or national income) increment to the capital investments which caused that increment. The annual national income increment for the recent three to four years in the USSR is 11-12 per cent, while the annual increase of industrial output is 12-14 per cent.

The increase of the national income depends not only on the gross amount of capital investments but also on their allocation to the various branches of the national economy, with due regard to the proper balance and co-ordination between the branches. The distribution of investments among various industries and enterprises should secure the maximum gross effect in the over-all development of national production. These investments are aimed at reaching the highest industrial development rates at more or less long-range prospects.

A maximum rate of prospective production growth can be attained only by such distribution of capital among various industries as would maintain them in due proportion under the conditions of enlarged production. For example, the highest rate of production depends on the maximum possible scope of capital construction, which in its turn, depends on the development of such vital industries as the production of metals, cement, and timber. The amount of capital investments during the Fifth Five-Year Plan (1950-55) was 10 times that of the First Five-Year Plan, and the investment of capital in 1956 was 23.7 times that of 1929. Within the same period, that is, from 1929 to 1956, the output of rolled steel had increased eleven fold, that of cement fourteen fold, and the output of deal timber 6.1 times.

Of particular importance is the development of the machine-building industry, as it should provide equipment for all the branches of the national economy. In the years of Soviet power the output of the machine-building and metal-working industries has increased greatly indeed; in 1956 it was 181 times greater than in 1913, while the gross industrial output was only 33 times greater. This enormous increase of machine-building production is due to the large output of automobiles, airplanes, tractors, machine tools, instruments, refrigerators, watches, etc., which were not manufactured in Russia at all in 1913. A more rapid rate of increase in the production of means of production, especially in machine building, is indispensable for enlarged reproduction at the highest rate. At the same time, it is most important to provide a steady increase in consumption and this naturally calls for the development of light industry, of food manufacturing, and of agriculture.

Thus the development of the various industries, as well as the allocation of funds among them, is determined by plan, which proceeds from the objective requirements of proportional development at the highest rates of industrial growth.

The initial outline of proportional distribution of capital investments among the industries should be corrected to comply with the most expedient of the alternative projects.

There are various ways of securing the necessary proportions in the national economy provided for by calculations made by means of the balanced method of planning. To select the most expedient way means to release money, manpower, instruments of labor for additional investments, and, therefore, for additional industrial development.

For example, a task set by the plan may be solved alternatively by several related branches of industry. For instance, the total of fuel required by the national economy may be provided by the production in various proportions of coal, oil, gas, peat, shale, wood, hydroelectric power, atomic energy, etc. Their respective efficiencies should be com-

pared. When considering electric power, estimation of economic efficiency is necessary to determine the correlation between steam power and hydropower generation. Economic calculations come in here most appropriately; moreover, they are necessary. They will show what sources of power should be developed and to what extent their development is expedient for securing the least expenditure of social labor and the utmost growth of its productivity. In this way they will help to determine the projects in which the required volume of production can be reached at the most favorable correlation between the current costs of production and the capital investments. Comparative effectiveness should be assessed in terms of value and those of volume as well.

But calculations of economic effectiveness are important, not only in establishing proportions in the national economy, but also as in the given case in establishing the proportions of the different branches of power generation.

The correlation between various branches of power generation is sure to affect some other industries. Thus, for the development of coal mining, timber, mining equipment, metal for mining combines and other machinery, for rails and railway rolling-stock are required; for the development of oil industry pipes and drilling equipment are necessary; and hydropower development requires concrete, metal, hydrogenerators, cables, and masts for the transmission lines. Different branches of industry will require different amounts of labor of different qualifications. All these varying outlays of social labor in related industries must be taken into account. So, when taking a final decision on a development of various branches of industry, such general aspects of the national economy should be considered as the development of the outlying national republics and regions, cultural progress, the integrated development of productive forces in certain regions, etc.

Thus, in the first place, the most effective way of capital investment is chosen by considering the problem of the comparative development levels of diverse related industries.

Second, the territorial distribution of industry may be considered, the planned target may be reached by developing the industries in various alternative regions, of which the most advantageous should be chosen.

Third, in considering the choice of equipment necessary for a designed output, comparison of effectiveness of the various alternatives will be essential.

Fourth, the alternative may vary in size of enterprise, in technology, and in the supply of raw materials. Here also the choice of the most effective solution will involve economic calculations.

In all these and similar cases when the planned target can be reached

in different ways, considerable economy in capital investments depends on the proper choice. At the same time, the choice of an alternative giving economy of investments in one branch of industry will permit the use of the released assets in other fields. This will call for corrections in the initial plans for industrial development and accordingly in the allocations among the branches concerned.

Thus, funds should be distributed among diverse branches of national economy in accordance with the task of achieving maximum production and maximum satisfaction of the requirements of the population. Allocation of assets should be based upon the balanced interconnections between various industries. At the same time, those alternative branches should enjoy preference, which, being most efficient, yield the largest return.

All this shows that expedient allocation of investments to various branches involves the solution of two closely related problems. The first is what kind and how much of production should be put out by the whole industry and by its individual branches. The second is how, by what technical means, it should be produced. And the solution of the second problem—of how to produce—necessarily affects the solution of the first problem—of what to produce—and therefore corrections have to be made.

To solve the problem of most expedient, profitable allocation of capital investments among the branches of industry, it should be possible to compare the effectiveness of expeditures in the various industrial branches, enterprises, and districts. How should such comparisons be made?

Due to planning of production, socialism provides great possibilities for correct computation of social labor expenditure. This requires the reduction of different, individual types of labor, applied in various branches and at different periods to a unit index, say, one hour of simple labor. On the other hand, the existence under socialism of commodity production and, though its function is limited, of the economic law of value, makes it quite possible to estimate various types of labor expenditure in terms of value.

The first thing to do is to determine the increase in the national product that can be brought about by the capital investments. Capital investments cannot increase by themselves and cannot create any new value: only labor can create it. But capital investments in the production of new means of production allow the equipping of the workers who create new values with improved or additional instruments of labor. This will increase productivity, enroll new labor and result in an increase of the national product.

So, on the one hand, we must compare investments for the expansion of fixed (capital) funds and, on the other, the increase of the national product brought about by these capital investments.

The increase of the national product in fixed prices depends on the increase of the labor force engaged in commodity production and on the growth of labor productivity. The labor force engaged in material production grows in the USSR on account of the natural increase of the population as well as on account of other sources. The total increase is approximately 4 per cent a year. Labor productivity grows considerably faster, at a rate of 6.5 per cent a year for the entire economy. Thus the growth of labor productivity is the main source of increase of the national product. This increase may be judged by the increment in the physical volume of the national income which is recently 11 per cent a year ($1.04 \times 1.065 = 1.108$).

In its turn, the growth of labor productivity depends on higher skill and advanced experience of the workers, on application of advanced technology; that is, on factors contributing to higher quality. On the other hand, it depends on the introduction of new and more efficient machines and technical equipment, which requires capital investments. Thus the measures taken to achieve higher quality and those involving capital investments can be assessed by the growth of labor productivity and, consequently, by the increased volume of the national product. Their effectiveness may be expressed in a number of natural indexes as well as in terms of value.

The introduction of up-to-date methods of labor provides an increase of output with the same equipment and number of workers, or it is possible to maintain the same output with less equipment and less workers. As a consequence, cost-reduction per unit of production takes place, by which the effectiveness of the given measure may be assessed. Practically, in such cases the unit cost or costs of production are made use of. That index may be supplemented by others, such as the rate of production expansion in terms of value and the growth of labor productivity per worker.

Capital investments are also saved. If a given production output requires fewer machine tools and less factory space, the released means of production may be used in order to increase the volume of production. In case the production is to be expanded, funds to be invested in additional equipment can be reduced.

Indices of real economy in labor and raw materials are of great importance. If the same output can be produced by fewer workers, there being no unemployment in the USSR, the surplus workers may be employed in some other section of the national economy; consequently, a corresponding increase of the national product will occur. The new

value produced by every worker per man-hour being known, it is easy to calculate the value of output which can be additionally produced by labor economized in a given section of industry. It is also possible that the introduction of improved labor methods will save fuel, power, metal, raw materials, etc. This also should be taken into account as an additional resource for increasing production. Thus the effectiveness of the introduced up-to-date labor methods can be assessed by the saved production costs and capital investments, by the economy in labor as well as fuel, power, and raw materials.

Besides the higher quality attained without additional capital investments, another very important method of increasing the productivity of labor—and consequently the volume of the national product—is the further mechanization of labor, the introduction of new advanced machinery which is constantly being improved. This requires capital investments drawn from the accumulation funds. Equipping the worker with new instruments of labor, providing more power and mechanization, the capital invested in new equipment and machinery allows the same number of workers to produce more goods or to lower production costs while maintaining the same volume of production. Let us note, by the way, that these two alternatives are not equal in importance to society, and the introduction of new technique is aimed both at increasing production and reducing expenses. The effectiveness of capital investments can be assessed if, as mentioned above in regard to advanced labor methods, the economy in the current costs of production, in fixed funds, in labor, in expenditure of fuel, power, and raw materials is revealed. This economy results from the capital investments made.

The above may be illustrated by the following calculation. It has been mentioned that during the Five-Year Plans (1929 to 1956) capital investments in the national economy amounted to 1,613 billion roubles in prices which existed on July 1, 1955 (capital investments of collective farms not included). Out of this amount, 1,137 billion roubles were invested during the Fourth and Fifth Five-Year Plans.

On the basis of these capital investments there has been created in the Soviet Union a powerful heavy industry and in the first place a machine-building industry, a step which permitted the technical reconstruction of the country's entire national economy. The productivity of labor increased to a considerable extent; the physical volume of the national product and the national income increased many times. State socialist property has been increased and consolidated; the economic independence and defensive capacity of the USSR is ensured. Thus capital investment in the national economy contributed to a tremendous consolidation of the material and technical basis of socialist production

and its quantitative growth. All this and in particular the growth of production caused by the capital investments is a manifestation of their effectiveness in general.

The increase of production may be expressed as the product of two ratios of growth: the ratio of growth of the number of workers and the ratio of growth of their labor productivity. Let us assume that in the course of a more or less protracted period, say from 1929 to 1956, the national product increased tenfold, from 200 to 2,000 billion roubles. On what account did it occur?

In the first place, the population engaged in productive labor increased, let us say, by 50 per cent, which means the ratio of growth is 1.5. If the labor productivity of each worker remained at its former level, the volume of the national product would have increased by the same rate of 1.5. But productivity of labor grows as well. Now let us assume that in the years under consideration, the productivity of labor increased 6.7 times. Under these conditions the gross national product should have grown 10 times ($1.5 \times 6.6 = 10$). If in the initial year of the period under consideration the value of the national product was 200 billion roubles, it should have attained the sum of $200 \times 1.5 = 300$ billion roubles on the account of the increase in population only (the productivity of labor remaining unchanged). This would mean an increase of 100 billion roubles. But productivity of labor also increases and with every worker producing 6.7 times more than before, the overall output will amount to 2,000 billion roubles ($300 \times 6.7 = 2{,}000$); that is, it will increase by 1,700 billion roubles.

Now let us examine the increase in the productivity of labor which depends on improved quality as well as on the introduction of new equipment and machinery. Let us assume that the technical equipment is not replaced but the productivity of labor has grown at a rate of 1.4, on account of improved workmanship. But this is not the case.

The workers not only gain experience and professional skill, but they are also supplied with new, modern equipment, which gives a 4.75 times increase in labor productivity; this means a 6.7 times total increase of labor productivity ($1.4 \times 4.75 = 6.7$). If the workers continued to work on old, obsolete equipment, the national product would amount to 420 billion roubles only ($300 \times 1.4 = 420$) due to higher qualifications and improved workmanship. However, new, modern equipment is installed and the national product has again increased by 4.75 times, making a total of 2,000 billion roubles ($420 \times 4.75 = 2{,}000$). Thus at the expense of introducing new equipment or by investing capital in it, the national product has increased by $2{,}000 - 420$; that is, by 1,580 billion roubles. These figures refer to the last year of the period under consideration. In order to calculate the entire accretion of the

national product achieved during that period due to capital investments in new equipment and machinery, we must sum up all the accretions in the national product received year by year in comparison to the initial year. If we then subtract from the total increment of the national product due to capital investment, the corresponding accretion in the material expenditures, i.e., expenditure of fuel, power, raw materials, depreciation, etc., we shall obtain the part of the net increment of the national income which is due to the capital invested. The ratio of its value in fixed prices (or of the physical amount of the national income) to the invested capital determines the effectiveness of these investments.

Let us assume that the annual increment in the national product is 100 billion roubles. The material expenditures of production amount to half of the national product, and therefore out of the additional products of 100 billion roubles, the increase of the national income is by 50 billion.

Let 35 billion roubles out of this amount constitute the accretion of the national income due to capital investments. To what part of the capital investments should this addition to the national income be attributed? Obviously we should deal with the capital investments made in previous years, which to a certain degree affect the consecutive increase of the national income, and this increment of the national income should be attributed to them. If, for instance, the sum of these previous capital investments, which influence the accretion of the national income during the period under consideration, reaches 350 billion roubles, this means that the annual increase in the national income due to capital investments is 10 per cent of these investments.

The total increase of the national income or of the net product due to capital investments is composed of the accretion of net income of the individual branches of industry, of the individual new, reconstructed, or just expanded enterprises, of individual newly introduced instruments of production. The amount of the accretion in net production which can be attributed to the capital investments made can be determined for each branch of industry, or for each individual case, in the way it has been done for the gross national product. Knowing, for instance, the amount of capital invested in the coal mining industry and the accretion of net production in this branch, we can determine the part of the accretion that should be attributed to the capital investments and thus establish their effectiveness in the industry. Similar calculations can be made for individual enterprises and for various technical measures and items as well. If, for example, the installation of a new machine costing one million roubles increases the annual production (minus material expenditure in stable prices) by 150,000 roubles, this expresses the effectiveness of the capital invested in the machine.

In calculations of this kind it is quite possible to make various comparisons showing the relative effectiveness of capital investments in alternative projects and consequently possible to select the most effective project.

In order to determine the effectiveness of the capital investments in this or that object, the increase in productivity of labor due to these investments, the increase of production in terms of value, and what economy can be obtained in the cost price of production should be estimated. Furthermore, the introduction of a new object may lead to economy in capital investments for other parts of the enterprise on account of the release of working premises and the reduction in the number of necessary machine tools.

Savings in current assets may also be achieved by economizing materials, fuel, power or by reducing the production cycle. Finally, shifting of a number of workers to other industries is possible, leading to an additional increase in the national product.

In determining the effectiveness of capital investments in a given branch of industry or a given unit, it is necessary to take into account the amount of investments or investments saved in adjacent branches. For instance, the construction of a hydropower plant makes it possible to economize on capital investments for the development of coal mining, though it may require the development of cement production. The large-scale application of fertilizers increases crop yields in agriculture but requires investment of capital in the chemical industry. Electrification of railways may bring about an economy of capital investments in fuel production, but it will require the manufacture of electric locomotives. This reasoning may be continued; for instance, an increase in coal mining requires pit-props. This means that the wood industry should be developed, and to do so, electric saws are necessary. This means a necessity to develop machine-building, etc.; in other words, additional calculations of the effectiveness of capital investments could be continued into the second, third, and further spheres of interrelated industries, which would render calculations extremely difficult. At the same time, the final result of the calculations would be subject to change with each new sphere, though apparently this change would become each time smaller and smaller. Therefore it is necessary to limit calculations by a certain sphere, deliberately putting up with some incompleteness in the calculations to avoid the enormous complication. On the other hand, most complicated calculations may be made with the aid of mathematical methods, with use of machine mathematics. All these calculations involve a number of methodological problems.

First of all, we must eliminate the influence which the changes in the purchasing power of money may have on our calculations. Prices in a

socialist economy are certainly planned and therefore not subject to frequent changes or fluctuations. Nevertheless, changes in prices sometimes occur, and it is advisable to take fixed prices as a basis for calculations. In practice calculations of effectiveness are usually made according to unit cost and not according to price.

Great importance should be attached to the question as to the period for which the economy in current costs of production should be calculated. It is quite obvious that in the first years of operation of a new object the costs of production may be unduly high, while the development of the production is still under way and the amount of production has not yet attained the planned figures. This may lead to losses. In various enterprises this adaptation period of attaining the planned production level may take some time. Therefore it is necessary to determine for each enterprise a certain date for which the cost of production should be estimated. Evidently this should be a date at which the actual amount of production will not be less than 70 or 80 per cent of the planned capacity of the enterprise, when current costs reach a more or less normal level. Thus with different rates of production the test periods turn out to be different.

It is also very important to determine this adaptation period or the period of construction, as during this period the capital investments are not used to their full extent or remain inert. Therefore it is necessary to calculate the effect unrealized by the national economy during this period which depends on its length. If, for instance, in the tenth year of operation the economy in the costs of production of a new enterprise makes 100 million roubles, and from the time it was put into operation ten years ago the annual economy made an average of half of this amount, it may be considered that the funds unrealized by the national economy during the adaptation period amounted to $\frac{100 \times 10}{2} = 500$ million roubles. Besides that, if the period of construction took two years longer than was expected by optimal standards, it may be assumed that another 200 million roubles are unrealized by the national economy.

Rates of effectiveness are subject to change with time. The mean effectiveness in the entire national economy must change in the first place, since it is made up by the various rates of effectiveness in the individual branches and the proportions between these branches change with time. Further, the rate of effectiveness of various branches is affected by diverse factors. Some of them tend to increase this rate and others tend to reduce it.

Rise of effectiveness is caused by technical improvement, increase of

labor productivity and economy in costs of production, better processing and dressing of raw materials, cheaper and faster transport, etc. Greater accumulation leads to greater capital investments, to greater possibilities of introducing advanced though expensive machinery which ensures higher output. This cannot be afforded if funds are insufficient. For instance, twenty years ago the Soviet Union could not afford the construction of such large hydropower plants as those of Kuibyshev, Stalingrad, or Bratsk, although these projects (and particularly the last one) will yield extremely cheap power. At present the USSR is much richer, and these great projects are now being realized (the Kuibyshev plant is in action) and the great benefits and industrial effects given by these plants are secured.

On the other hand, there are factors reducing the effectiveness. Thus, with the development of production, it is sometimes necessary to use remote raw materials sources and sometimes to use inferior raw material with the result that costs of production, dressing, and transportation are increased. When the productive forces of society are still underdeveloped, society can afford capital investment only in the most important, vital, and most effective projects. Later, with the development of production and the increase of accumulations, society can build more expensive and less vital and effective enterprises, can afford expensive materials, better equipment, finer finish, and greater comfort for personnel.

In order to show which of these two tendencies takes the upper hand, calculations are again necessary both for the past data and for the future planning and designing of capital investments in new projects. Yet some suggestions can be made a priori. Apparently if we take value indices as a basis for calculations, we shall see in a socialist economy (though of course in a rather different form) a phenomenon similar to what we call with regard to capitalism the rise in the organic structure of capital. This is the outcome of the priority development of the production of means of production, of the technical progress leading to the replacement of old machinery, and to mechanization and automation of production. As a result, the share of past labor embodied in the means of production increases while that of live labor drops. Therefore, the ratio of the new value produced by live labor (that is, net product or national income) to the value of newly introduced means of labor (that is, capital investments) drops, too. In this connection we should also note the increase in the share of fixed funds in relation to current funds—a fact which retards the turnover of all funds taken together. All this tends to reduce effectiveness expressed in terms of value.

Things, however, become different when we face the physical volume of production. The introduction of new machinery, the transition to

continually improved instruments of labor and improved technology, and the higher skills of workers must lead to a continuous rise in labor productivity, and in this connection to an absolute and relative increase in the physical volume of the national product and national income. Therefore, if we take as a criterion the ratio of the physical volume of the national income to the capital investments to which it is due, we shall find here a tendency to rise.

The changes in the effectiveness of capital investments which have occurred in the course of the past years show trends which should be taken into consideration for assessing prospective effectiveness. How can this planned effectiveness be determined?

Its average level for the entire national economy in terms of value can be determined on the basis of the most important proportions in the national economy. The plan for the development of the national economy provides for the physical volume of the national product, of the national income, of the funds for consumption and accumulation, and takes into account the increase of the productive population. It is quite possible to envisage in the plan an increase in the productivity of labor as far as improved experience, professional training, etc., are concerned. All this allows us to find out the degree of dependence of the increase of the national product and national income on this or that factor determining its level, including capital invested in new instruments of labor. In this we should pay less attention to the capital investments for the year that is being planned (the effect of which will become noticeable after a more or less prolonged period). The main attention should be paid to the capital investments of previous years the effect of which is becoming manifest just now. Thus it is possible to establish the mean rate of effectiveness of capital investment for the entire national economy.

It is very important to determine correctly this mean rate of effectiveness. If the rate of effectiveness is taken too low or completely disregarded and the choice of an alternative is based on minimum cost prices of production, the most expensive alternatives requiring the greatest capital investments will be chosen. In this case labor productivity will be high, but such enormous assets will be needed for capital investment that the accumulation of funds might fail to provide for all the required projects. If the rate of effectiveness is exaggerated, the cheapest alternatives, technically backward but requiring smaller capital investments, will be chosen. In this case some of the accumulation of funds may remain unused, while lack of labor will impede the production program. Therefore, the effectiveness rate should be so determined and calculated that complete utilization of both the accumulated funds and labor will be ensured.

The question arises whether the rate of effectiveness should be the same for the entire national economy or be differentiated according to the individual branches. There are two points of view on this question.

Those who stand for a unified factor use the following arguments. In planning production it should be determined in the first place what products are to be produced in the coming year; i.e., how much fuel, power, metal, machinery, textiles, grain, and so on is required. It should also be kept in mind that all these volumes of production should be established on the basis of a definite proportion in the development of various branches, on the basis of a balance of the national economy with priority development of the production of means of production. When deciding by what technical means this production is to be achieved, the difference between the various branches and their importance for the national economy and the state may be neglected. That is, both in the iron and steel industry and in the production of liquors and vodka the technical level of production should be equally high, and the degree of their mechanization, electrical equipment, etc., should not differ with the importance of the branch. A situation in which mechanization and automation would prevail in one branch and manual labor in another would be intolerable. All branches of industry should have a maximum of mechanization and automation. Therefore, it would be wrong to supply one industry with capital investments generously and to restrict the others. All branches must receive capital investments on an equal basis, according to their requirements in technical equipment. Only in this case can the effectiveness factor be unified and maintained at a certain average.

Such approximately is the argument of the partisans of an average effectiveness factor. They are not very convincing. In the first place, the question of what to produce is closely linked with that of how to produce it. The choice of instruments of labor in various branches of industry determines the volume of production of these instruments as well as the distribution of production among the branches. As to the technical level of production in various branches, it cannot be uniform for a number of reasons. Among these is the difference in technology which in some cases demands individual treatment and manual labor, while in others complete mechanization and automation are desirable. Also there are differences in the cost and in the lives of various means of production (say, in a hydropower plant and a tobacco factory). Thus in the case of expensive machinery with a long life service it will be necessary to have the latest and most advanced models while a somewhat lower technical level with cheaper equipment and a shorter serviceable life will be adopted in other branches. Again there is the difference in the skill of workers which is higher in vital branches of in-

dustry so that conditions are particularly favorable for the introduction of advanced machinery in these branches. Further there are the considerable expenses connected with the transfer of workers from one branch of industry to another on account of the difference in specialty. Things are not so simple as the partisans of the unified effectiveness factor imagine. Finally, we cannot disregard the difference in importance of the various branches of the national economy. Advanced techniques should be first introduced into metallurgy, machine-building, power generation. As to confectionery or the production of wines and liquors, perfumes, toys, and similar branches, they will be obviously reconstructed in their turn but not simultaneously with the most important branches of industry. All this means that the vital branches should receive capital investments more abundantly than the secondary ones, and consequently the pay-out period in such enterprises should be longer and their effectiveness factor lower than in the secondary branches.

This is just what actually takes place. Thus, in various branches of heavy industry and especially in its principal branches—such as power generation, metallurgy, and machine-building—the need for capital investments is usually more fully satisfied than in the light or food manufacturing industry. Therefore, in the choice of alternatives, the pay-out periods in large enterprises—for instance, hydropower plants—are usually long while in manufacturing they are much shorter. This means that the effectiveness rate in hydropower engineering is lower than in manufacturing.

In establishing the planned rate of effectiveness one should bear in mind the essential quantitative difference between the mean effectiveness of planned projects and the marginal effectiveness used as a criterion in the choice between alternative projects. This marginal effectiveness criterion separates the projects that are to be realized from those that should be rejected. The mean effectiveness of the projects included in the plan should be found somewhere between the most effective and the least effective of these projects, while the criterion of planned marginal effectiveness should be at some point corresponding to the least effective project included in the plan. If in hydropower engineering the pay-out period is assumed to last sixteen years, this means that it is expedient to build hydropower plants with pay-out periods of sixteen, fourteen, twelve, ten, eight, and six years, and that the average pay-out period in the hydropower projects selected for inclusion in the plan will not be sixteen, but eleven years. But it would be obviously wrong to use an eleven-year period as a criterion, as this would rule out enterprises with pay-out periods lasting twelve, fourteen and sixteen years.

The comparison of alternatives should be carried out with a number of economic indices, in terms of value and volume as well, for the value indices do not always reflect all the advantages or drawbacks of the compared projects, such as their different significance for cultural development, etc.

The comparison, however, should be carried out mainly in terms of value, if the compared alternatives fully conform with the general requirements of the national economy. If according to value indices the projects are equally expedient but differ considerably in some other important aspect (for instance, one of them requiring too much labor or some special critical material), the value indices will be insufficient and comparison of all the real economic indices should be carried out with detailed analysis of every aspect.

So, when comparing alternative projects it is necessary, first of all, to determine the required capital investments and current expenditures for each project. This may be done in several ways. The simplest is to estimate the sum of capital investments and current expenditures for each project in the adaptation period necessary to reach the planned production level. Such a comparison will make it possible to choose preliminarily the project which shows the lowest construction and operational expenses during the calculation term. Yet beyond this calculation term the economy in current expenditures will not be taken into account.

Another method is to compare the alternative projects in pairs and determine the difference in capital investments and current expenses for the term of calculation. Then, for the project involving larger investments, it is necessary to determine the periods of pay-out on account of economy in current expenditure.

The third method in fact is a variation of the second; it involves the estimation of the current costs of production with an additional percentage of initial investment calculated in accordance with the established rate of effectiveness (inverse of the pay-out period) in the given branch. That additional percentage of investment is similar in form to the interest on capital assets. The essence of such a comparison lies in the fact that the capital investments used in this branch (or in any enterprise of this branch) will provide the effectiveness planned for the branch by supplying the workers with new machinery. The use of the effectiveness rate allows us to estimate the difference in the amount of capital investments in the alternative projects being compared.

After the preliminary establishment of the advantages of a project, it is necessary also to take into account the effect of the different periods required to get the compared projects going. The longer this period, the longer the capital investments remain inert, while capital invested

in a project with a shorter construction period will already be working. Here the following arguments should be considered: If the capital remaining for a time inert due to delay in construction had been invested in some other section of the national economy, it would allow an increase in labor productivity and give an effect conditionally equal to the average effect for the entire national economy. This is what should be considered in the comparison. In other words, for projects requiring longer construction periods, to the total amount of construction and operational costs the unrealizable part of the national product should be added.

When comparing alternative projects differing in periods of investment, the effect of delaying investments should be estimated. This refers to a case where, say, one project requires a smaller sum but without delay, while the other requires a larger sum but over five or ten years. If the latter project is chosen, assets may not be invested immediately but used in another section of the national economy, where in the five or ten years in question they would bring a growth of production conditionally at the same rate as in the over-all national economy. This shows that delay of investments to a later date is similar to an increase of the current year's capital investments by the same sum with all the ensuing consequences. Therefore it is of paramount importance not to freeze investments but if possible transfer them to the following years applying the released assets where the demand is most keen.

On the other hand, capital investments planned for the future may be expressed in terms of today's investments. For this purpose the assets to be invested in the future, say over t years, may be regarded as a sum of today's investments plus the effect which can be derived during these t years. For instance, five million roubles to be invested over t years may be regarded as three million roubles invested today, plus a two million roubles effect obtained in the t years' period. That is, a capital investment A will give a certain economy effect in the period of t years, so that the capital investment plus the economy will amount to AR, where R is the rate of growth, which is more than one. This means that the capital AR invested in the "t th" year hence is equivalent to the capital A invested today. In other words, the expenditure AR for the "t th" year divided by R will be equal to the expenditure A of the initial year.

The comparison of alternative projects should take into consideration that, as time goes on, the cost of materials and means of production will drop as a consequence of technical progress, the growth of labor productivity, and the reduction of production costs. Therefore, in calculating the prospective effectiveness, as we always have to do, one has to deal with prospective prices and their forthcoming reduction.

Thus by analyzing the effectiveness of capital investments made in previous years and on the plan data concerning the national product, national income, consumption, and accumulation, it is possible to establish a system of capital investment effectiveness indexes in order to assess the expediency of such investments in the process of planning and designing. The main task of such economic calculations is to compare, on the one hand, the expenditure of social labor involved in the realization of the project and, on the other hand, the advantages which the project can give to the national economy. In that process, calculations of expenditures and profit should be as complete as possible, not only in the narrow limits of the given branch of industry, but also in other branches of the entire national economy with which the project may be connected. Furthermore, these comparisons should not refer to some period taken at random but should embrace a period of sufficient duration and proceed from the prospective development of the country's national economy.

ECONOMIC ASPECTS OF PEACEFUL COEXISTENCE OF TWO SOCIAL SYSTEMS

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Many different views on peaceful coexistence have been expressed in the world press and literature. But so far the economic aspects of the problem have not received sufficient consideration and at times they have been ignored altogether. Usually the authors have concentrated on the military, political, and social aspects of the issue.

In this short paper I do not presume to give a profound economic analysis of this major problem of our time. I shall be satisfied, if I succeed, even in a small measure to draw the attention of this highly qualified audience to the imperative and urgent task which faces the nations of the Eastern and Western Hemispheres.

At a time when science has placed at man's disposal thermonuclear weapons and the ballistic rocket, I believe mankind has to choose either peaceful coexistence or an unprecedented, devastating war, whose lethal and destructive powers we hardly dare to imagine.

In the Soviet Union and in all countries of the socialist system, statesmen, scientists, and the public as a whole are profoundly confident that under the present conditions a war which would entail incalculable disaster to mankind can and must be averted. The development of science and of the means of destruction has reached now so high a level that war would be utter madness.

In our time peaceful coexistence is not only desirable from the point of view of elementary common sense, it is essential. That is why the idea of peaceful coexistence is becoming increasingly popular. Hardly anyone will deny that the concept of peaceful coexistence of states in its full and positive sense implies that these states co-operate in diverse fields and principally in the sphere of economics. In what way can the two systems benefit from economic co-operation? Is it really necessary? Is it possible? What forms can it take?

Economic co-operation is undoubtedly possible and necessary. It is not only an essential part of the foundation on which the nations can build the edifice of true peaceful coexistence, but it will also help to increase the rate of economic progress in the co-operating countries.

There is no need to prove that wherever mutually advantageous economic connections develop and become stronger, animosity and distrust vanish, the forces of war are driven back, and are replaced by friendly relations between the countries and the nations concerned.

Economic co-operation based on the recognition of the equality and sovereignty of all states—a co-operation which precludes any discrimination—strengthens mutual trust and confidence and promotes peaceful international relations. This truth is so simple, clear, and undeniable that many prominent people in the capitalist world admit it in one form or another.

Permit me to quote, as an example, Sir Winston Churchill. On February 25, 1954, addressing the House of Commons he said: "The more the two great divisions of the world mingle in the healthy and fertile activities of commerce the greater is the counterpoise to purely military calculations."

One can hardly conceive lasting peaceful coexistence without constructive economic co-operation. This co-operation can benefit both the socialist and the capitalist states.

International economic co-operation is based on the natural division of labor evolved in the course of history. Diverse natural and historical conditions have caused specific industries to predominate in different countries. Different industrial habits have been formed. As a result, some countries find it more advantageous to produce, let us say, sugar or to go in for shipbuilding while others prefer to manufacture cars or textiles. The international division of labor and the branches of industry which happen to exist in different countries at present can of course change. The agrarian countries are developing their own industries and many states are adding new agricultural and industrial branches to those which have been established long ago. Nevertheless, the international division of labor corresponding to the countries' natural resources, geographical and climatic conditions, historical traditions, and industrial habits continues to offer practical advantages.

It would undoubtedly be a step forward if the economic restriction of certain areas were to be lifted and healthy economic relations would develop among all the countries in the world leading to greater intercourse among the nations and bringing them closer together.

In the views of Soviet economists, no country has any cause to view with jealousy or hostility the progress of another country. On the contrary, it should encourage it, since the development of any country, provided it is not taking place at the expense of other countries, contributes to the over-all human progress and finally improves the living standards of all nations.

This is one of the basic principles of Soviet policy and of the policy of all socialist countries. Soviet economists are in favor of large-scale economic co-operation among all the countries of the world irrespective of their social systems because they realize that economic co-opera-

tion raises the prosperity of all the participants, brings the countries closer together, helps to consolidate peace, and thereby contributes to the general progress of mankind. In this connection I would like to remind you that early in 1956 the Soviet government offered the United States to negotiate a treaty of friendship and co-operation. Last November, N. A. Bulganin, Chairman of the Council of Ministers of the USSR, repeated this offer in his letter to President Eisenhower.

The Soviet Union—and to an even greater extent the socialist system as a whole—possesses the necessary resources for a successful development of their economies. The policy of embargo which has been practiced—and which the main capitalist countries still practice to a certain degree—has provided the incentive for the socialist states to exert great efforts and to build at home industries which they would not have been developing on a great scale if normal international trade existed. Nobody can deny that today the socialist system is economically independent of the capitalist countries. Nevertheless, the Soviet economists are advocating strongly the development of international economic relations, not only because this is expedient in general, but also because it serves the interests of peace and world progress.

There was a time when certain people alleged that the reason for this attitude of the Soviet economists should be sought in the economic weakness of the Soviet Union which they maintained was not able to manage without the products of the capitalist states. I believe that today when the results of my country's economic and engineering progress can be seen with the naked eye even in the skies over the United States of America, no person with common sense will suspect that socialist science is guided by some selfish motive when it recommends broad economic co-operation of the two systems.

What, indeed, do the facts and figures tell us? At present the socialist countries include more than one-third of the population of the globe, approximately one-fourth of the land surface, and they produce nearly one-third of the world output. And yet the goods bought from and sold to these countries during the last few years form only 2.5 to 3 per cent of the capitalist states' exports and imports (according to the data published by the United Nations). These figures demonstrate what tremendous potentialities exist for a trade expansion between the countries of the two systems.

In accordance with the socialist countries' contribution to the world's industrial output or the size of their population, the share of the countries of the socialist system in the international trade of the capitalist countries should reach approximately 25 per cent; in terms of dollars this would amount to scores of billions. Even if we assume that at the

early stages of normal development of economic co-operation the share of the socialist countries in the international trade of the capitalist countries will only reach 10 or 15 per cent, already this would greatly increase the capitalist countries' volume of exports and lead to a very substantial expansion of world trade. Under the conditions of peaceful coexistence this is a completely realistic prospect.

If the socialist countries share in the foreign trade of the capitalist states were to reach 10 per cent, this would merely restore the position existing before the outbreak of the second World War. For at that time the foreign trade of the U.S., Great Britain, France, Germany, Italy, and Japan with the countries that form now the socialist system amounted to 10 per cent and more of their total export-import volume.

What advantages can the capitalist countries gain from expanding their trade with the socialist system? I have already mentioned the over-all beneficial influence of international economic co-operation upon international relations and the economic progress of the individual states.

In addition, it may be worth remembering that because of their system of planned economy there can be no economic crises in the socialist countries. Therefore, they offer a stable market not subject to sudden cyclic changes. Considering the economic slumps in the capitalist world, socialist countries can be an important outlet for industrial and farming produce of the states suffering from temporary overproduction. In case of an economic crisis the guaranteed stable market provided by the countries of the socialist system can substantially improve the lot of the working class and the peasantry and also alleviate the difficulties of industrialists hit by the crisis.

This is not mere theory, it has been corroborated by experience. In 1930 and 1931, when world trade was swiftly shrinking, the U.S. exports to the Soviet Union did not drop, but on the contrary increased in camparison to previous years. In 1928, they amounted to 74 million dollars, in 1930 to 114 million, and in 1931 to 104 million. During these years the Soviet Union occupied the second and first place in American exports of industrial equipment. In 1931 world exports shrank by 42 per cent compared with 1929. In the same period Soviet imports increased by 26 per cent. In 1932 the Soviet Union absorbed almost 50 per cent of the world's machinery exports, not counting automobiles. A recent statement in the British press stressed that in the early thirties the British machine-tool industry was saved by a flow of orders received from Soviet planned economy.

In case of normal trade contacts with the capitalist world the socialist market can be an important stabilizer not only during an economic crisis. In the last years, war production has formed a substantial part

of industrial output. The overwhelming majority of goods earmarked for military requirements is lost to normal reproduction. It is excluded from the economic turnover and is a waste so far as the economic life of the population is concerned. The greater the share taken up by war production in a given country, the greater the volume of material values that the population of that country loses. Some people believe that this loss is unavoidable and that under modern conditions the capitalist countries must have a large war industry since this results in the systematic destruction or removal of a part of the national output and thereby helps to avert the overproduction crisis.

An analysis of these concepts would take me outside the limits I set myself in this talk, but I would like to emphasize that it is obviously much more profitable for the capitalist countries to reduce war production radically and to expand at the same time trade with the socialist countries. In that case, the over-all production would not decline but, on the contrary, it would continually grow because of the expanding export market. The material values would not be subject to destruction, and an appropriate return would be received for them. The output used in this way would improve the population living standards and raise the countries' prosperity.

Spending a big portion of the national income on war production reduces in the final count the population's purchasing power, worsens the living standards, and drains the country's wealth, because a part of the output is continuously squandered. Economists and statesmen in many Western countries, including Great Britain, agree that the present military burden is too heavy for their economy and that its reduction would contribute greatly to the solution of their economic difficulties. If normal conditions of economic co-operation were established between the two systems, world trade would grow rapidly, and with the recognition of the principle of peaceful coexistence would result in the disappearance of the disastrous economic phenomena which accompany the arms race. This is why Soviet economists are persistently suggesting that the slogan "Let us arm" should be replaced by the slogan "Let us develop economic co-operation."

Certain economists assert that East-West trade will remain small in any case because of the absence of favorable conditions for its growth. They allege that socialist countries try to satisfy all their requirements with their own resources and that on the other hand they can offer hardly any commodities which the capitalist states need. In my opinion this is merely an attempt to justify the isolation in regard to trade with the socialist states which a number of capitalist countries have imposed upon themselves.

The fact that East-West trade has so far been very limited can by no

means justify the assumption that this is something normal. The atmosphere of cold war and animosity, of balancing on the brink of war and discrimination, is the main reason for the weak development of East-West economic relations. If we abolish this main impediment and create a favorable climate for economic co-operation, it will certainly grow and flower for the benefit of all countries.

Even in present-day conditions, international trade is making headway though it has to overcome great obstacles blocking its path. The Soviet Union, for instance, is trading with more than sixty-five countries. While Soviet-U.S.A. trade has been very limited since 1949, the Soviet Union and many countries of the socialist system have considerably increased their commerce with Great Britain, France, and the German Federal Republic. Exports from all West European countries to the countries of Eastern Europe (excluding the trade between East and West Germany) have doubled between 1950 and 1956 (they rose from 643 million dollars to 1,317 million); imports have doubled as well (from 801 million dollars to 1,628 million).

In addition, trade between the socialist countries and the Asian and African states has grown substantially. The over-all trade between the socialist and capitalist world has increased in three years (1954 to 1956) from 3.4 billion dollars to 5.2 billion. During this period trade between the Eastern countries and the West went up by 50 per cent while the export-import operations between the Western states increased only by 20 per cent. It is interesting to note that a considerable trade is maintained between the socialist countries and certain capitalist states. In 1955-57, 20-22 per cent of Turkey's exports went to socialist countries and 15-18 per cent of her imports were supplied by socialist countries. However, the share of the capitalist countries in the trade of the Soviet Union, China, and most of the other socialist countries amounts to less than 20 per cent. It is perfectly evident that in a different political climate where no discrimination is practiced the volume of trade between the socialist and capitalist system could be raised steeply.

In particular it was the U.S. repudiation of the trade agreement with the SU and its efforts to impose an embargo which led to the present extremely low level of Soviet-American trade. Under normal conditions we would buy in the U.S.A. a great variety of goods and we could offer other commodities in exchange which formerly the U.S. had been importing from the USSR.

Constructive international economic co-operation is obviously not restricted to trade only. It is well known that the Soviet government has proposed co-operation in the peaceful uses of atomic energy. This offers a vast field where Eastern and Western countries could work

together. Or let us take the exchange of economic and technical experience, or such questions as the irrigation and development of large deserts, the construction of great canals, interplanetary flights, and co-operation in advancing the economic progress of the underdeveloped countries.

Why should we not co-operate on a large scale in all these fields? Why not expand a hundred fold the joint activities of Eastern and Western countries in science and culture, accelerating thereby the general economic advance and ensuring humanity's rapid progress? Soviet people are proud of their scientists' achievements but at the same time they hold in high esteem the contributions made by the scientists of all countries to the store of world knowledge.

Cinema and art, medicine, education and sport, writers, technicians and social workers, all the people of good will, all those who consider that it is their duty to prevent the atom century from becoming a century of terror and destruction, all those who strive to turn it into the century of prosperity for all the nations of the world can take part in business and cultural co-operation between the East and West.

It is true that many people in capitalist countries are still under the influence of the war psychosis, and the cold war complex continues to affect their ideas and actions. There are individuals who do not think that economic contacts between nations could and should form the basis for good neighbor relations and a lasting peace but who wish, on the contrary, to utilize economic relations as a tool of war. In particular I have in mind a statement by Mr. Benjamin Fairless, President of the American Iron and Steel Institute, made in New York on November 18 at the inauguration of the 44th National Foreign Trade Convention. He claimed that trade is a "secret weapon" of the United States for winning the "cold war."

Press reports seem to indicate that the number of people who hold similar sentiments is dwindling rapidly, while more and more statesmen and businessmen are inclined to believe that the development of economic co-operation will diminish international tension and that the cold war imprint should be removed from international economic relations. Characteristic of this point of view are the speeches delivered recently by financiers like Cyrus S. Eaton and P. M. Warburg. Already in 1955, the *Washington Post* wrote that the overwhelming majority of the American public considers that trade would help to achieve a better and clearer understanding with Russia.

Emrys Hughes, Labour M. P. of Great Britain, wrote: "Our aim should not merely be peaceful coexistence with the USSR and China but positive and active co-operation in plans for raising the standard

of human life throughout the world and directing the energy that we are now devoting to war preparations to developing the backward countries."

Soviet economists are confident that common sense will prevail when the question is decided whether peaceful coexistence is to be put into practice and whether economic co-operation between the two social systems is to be developed, and they believe that the nations will find the strength to promote fruitful economic co-operation and to establish a lasting peace.

DISCUSSION

HOLLAND HUNTER: The American Economic Association is fortunate to have this contribution from a distinguished Soviet economist, on a topic of great theoretical and practical interest. Professor Khachaturov has been a leading participant since 1946 in Soviet discussion of this problem.[1] The topic is, of course, a large one, and his discussion is quite properly a broad sketch of current Soviet thinking. Moreover, though the subject matter can frequently be handled with more precision through the use of equations or graphs, they could not appear in a paper prepared for oral delivery. I shall limit my brief remarks to a summary of his argument and a few comments on points where an exchange of views would appear fruitful.

Investment in the Soviet economy, Professor Khachaturov tells us, is undertaken to raise the economy's output and living standards. Something like a quarter of the national income is devoted to capital formation. It is allocated among sectors so as to maximize the rate of industrial growth. Industries are interdependent, and investment allocation decisions must therefore be internally consistent. Not only must connections among industries be recognized, but choices must be made among regions and alternative production processes as well. Moreover, the bill of goods initially specified in a plan will be influenced by the investment allocation decision made in the planning process, and adjustments will be required.

In the Marxian tradition, Professor Khachaturov measures capital productivity through estimating the change in labor productivity that results from adding capital to the production process. This can be determined, *ex post*, through dividing a time series for output in roubles by a labor force time series. His hypothetical example for a 28-year period shows that the growth in output can be thought of as a product of three factors: a larger labor force, improved skills in the labor force, and additions to capital plant and equipment. Isolating and summing up the annual increments of output ascribable to new capital and relating them, with an (unspecified) time lag, to prior investment outlays, he suggests that the effectiveness of capital investment can be estimated, both for the whole economy and for each individual sector. He adds that if investment in one project obviates investment elsewhere, this saving should be credited to the project if it can be readily estimated.

Turning to the problem of estimating capital effectiveness *ex ante*, Professor Khachaturov notes that a new project's operating costs should be computed using constant prices, and adds later that anticipated cost reductions should be taken into account. Estimated operating costs for a new project should refer to its performance when it has reached 70 or 80 per cent of its planned capacity, and he suggests that the cost of tying up capital during

[1] For background and analysis, see Gregory Grossman, "Scarce Capital and Soviet Doctrine," *Q.J.E.*, Aug., 1953, pp. 311-343, and the literature there cited. Further Soviet discussion appears in *Voprosy Ekonomiki*, 1954, No. 3, pp. 99-113. Professor Khachaturov's latest contribution is an article in *Voprosy Ekonomiki*, 1957, No. 2, pp. 106-121, from which portions of the present paper are drawn.

the intervening period, before operating savings are fully obtained, should be charged against the project in evaluating it.

Professor Khachaturov offers interesting speculations on future trends in the over-all level of capital effectiveness (our *mei* or *mpc*). It may rise or fall in the long run. In value terms, it will probably fall, but in physical terms it seems more likely to rise. The immediate average effectiveness of capital can be estimated, he suggests, on the basis of past investments whose effect is just appearing. Great accuracy is required in making this estimate, because it will be used in screening projects and rationing the investment funds available. As to whether or not a uniform rate of capital effectiveness should be employed in *ex ante* computations for every sector of the economy, it appears that there are two schools of thought in the USSR. One school argues that the bill of goods for the coming year should first be specified, with capital then being allocated to individual sectors equitably, so that they are equally mechanized. Professor Khachaturov disagrees, setting forth several cogent arguments. The other school reasons that some sectors are more important than others. In actuality, permissible pay-out periods in favored sectors of the economy are longer than in other sectors.

The distinction between average and marginal rates of effectiveness is noted, and the marginal rate is suggested as the criterion for use as a cutoff level below which projects will not be carried out. In all this, Professor Khachaturov recommends that primary weight be given to computations in value terms, supplemented by other considerations, such as noneconomic benefits and costs, or possible shortages of some inputs.

In choosing among alternative technological means for reaching a specified production objective, Professor Khachaturov discusses three approaches. If I understand him correctly, the first simply involves adding together the initial capital outlay and the annual operating expenses during the period until the project reaches capacity operations; the cheapest approach will then be selected. A second procedure would repeat these computations and then direct the choice toward the project whose operating economies would most quickly pay off the capital outlay. The third method would estimate current operating costs for each project and then add to each an annual sum representing the initial capital outlay divided by the pay-out period employed for that sector of the economy. The least expensive project would then be selected. Under all three methods, investment projects tying up capital for long periods should be debited appropriately, while projects that defer some of their capital outlays to the future should be credited with the sums they release for use elsewhere. The discount factor suggested for the latter computation is the current over-all average rate of capital effectiveness.

The reader will share, I hope, my feeling that this paper is a very interesting contribution to international economic discourse. The broad theoretical problem of efficient resource allocation, and in particular of efficient investment allocation, confronts economists everywhere. It is probably fair to say that we are insufficiently acquainted with each other's literature. Even where institutional answers differ widely, there should be mutual gain in comparing our theoretical analyses. Professor Khachaturov's admirably scientific tone sets a high standard for a further exchange of views.

Let me offer a few miscellaneous comments, intended only to raise questions which could be pursued in subsequent exchanges. First, I confess to being puzzled by Professor Khachaturov's approach to national income accounting. He deducts from the increment in national product due to capital investment, "the corresponding accretion in material production, i.e., expenditures on fuel, power, raw materials, depreciation, etc.," to obtain a "net increment of national product." This sounds like a value-added approach to output, though his hypothetical example appears to employ the usual Soviet gross value approach, which sums the output of all industries, regardless of double-counting, and which excludes services. More fundamentally, he measures output in terms of one input, labor, though his recognition that the bill of final goods is not fixed requires him to value production in terms of some welfare standard.[2] The Soviet objective of investing so as to maximize the rate of industrial growth necessarily involves a choice between present and future consumption.

Given some specified volume of investment funds for the next plan period, Professor Khachaturov appears to approach a recommendation that the marginal rate of capital effectiveness employed be such as to bring the demand for capital into equilibrium with its supply. Although Professor Khachaturov advocates different rates of capital effectiveness for different sectors of the economy, his discussion of the distinction between average and marginal rates appears reconcilable with a uniform marginal rate, the differences appearing in average rates alone. Since scientific precision, quite apart from doctrinal considerations, leads inexorably toward equating productivities at the margin, it will be interesting to see how Soviet theory on this matter develops. If nonlabor factor services are recognized and an opportunity-cost approach is employed, Soviet economists can abandon their tortuous attempts to credit an efficient project with the savings obtained through not carrying out other projects.

One final point. In measuring capital productivity through estimating its impact on labor productivity, Professor Khachaturov excludes the effect of higher skills in the labor force. But the Soviet government has invested enormous sums in precisely this form of social capital, and its contribution has been notable. In some cases it may be more productive than investment in physical plant and equipment. Moreover, one depends on the other. Here, again, theoretical work needs to be done. It could perhaps even be argued, as a specific instance, that sums invested in greatly expanded scientific exchange between Soviet and American economists would raise the productivity of our profession in both countries.

FRANK H. GOLAY: Professor Aboltin brings the message that the countries of the "socialist system" are anxious to expand trade with the non-Soviet world. I have nothing to add to his enthusiastic endorsement of comparative advantage and confine my comments to some of his more specific observations.

Professor Aboltin concludes that Soviet Bloc efforts to expand trade have been stifled by "economic restrictions" imposed by the West. Such a conclusion

[2] See Abram Bergson, *Soviet National Income and Product in 1937* (Columbia University Press, 1953), Chap. 3. A scientific exchange of views on national accounts, perhaps under the auspices of the Economic Commission for Europe, would clearly be fruitful.

presumably refers to the informal Coordinating Committee of Western nations which began meeting in the early part of 1950 to establish a common policy with respect to shipments of munitions and strategic materials to the Soviet Bloc and the United Nations General Assembly recommendation of May, 1951, of a strategic embargo against Communist China.

Western surveillance of movements of strategic commodities to the Soviet Bloc does not seem to have been a significant determinant of the volume of trade between these areas. Imports of the USSR from the fifteen countries participating in the Coordinating Committee (see table) increased in value

SUMMARY OF TRADE OF THE USSR WITH NON-SOVIET AREAS*

	Indexes of Value of Trade 1947–49=100				Per Cent Distribution of Total Trade of USSR with Non-Soviet Areas	
	Imports of USSR		Total Trade of USSR			
	Average 1952–53	Average 1954–55	Average 1952–53	Average 1954–55	Average 1947–49	Average 1954–55
Coordinating Committee Countries†	128	176	118	157	45	55
Neutrals‡	89	89	95	103	43	35
Rest of non-Soviet world	50	89	48	106	12	10
Total	92	114	99	128	100	100

* Value of trade with the USSR converted to current U. S. dollars as reported by non-Soviet Bloc countries. United Nations, Statistical Office, *Direction of International Trade*, Statistical Papers Series T. Total trade is sum of imports and exports.

† United States, Canada, Japan, United Kingdom, France, Western Germany, Italy, Belgium, Netherlands, Luxembourg, Norway, Denmark, Greece, Portugal, Turkey.

‡ Austria, Sweden, Switzerland, Finland, Yugoslavia, Iceland, Ireland, Spain, Sudan, Egypt, Syria, Lebanon, Burma, Ceylon, India, Indonesia.

by 76 per cent between 1948-49 and 1954-55 while USSR imports from the rest of the non-Soviet world declined by 11 per cent. During six years following 1949, the countries regulating exports of strategic commodities increased their share of the trade of the USSR with the non-Communist world from 45 per cent to 55 per cent. Because of the selective nature of such controls, they have not proved to be a significant obstacle to expansion of Russian trade with the West. More surprising is the failure of USSR trade with "neutral" countries (see table), presumably subject to economic considerations, to grow in a period in which world trade was rapidly expanding.

While Professor Aboltin's appraisal of the impact of Western controls over exports of strategic materials to the Soviet Bloc is at variance with the available evidence, his plea for abandonment of this policy should receive consideration. The Soviet economy undoubtedly adapted to the limited impact

of such controls in short order while they have remained a persistent irritant to Western cohesion and a vulnerable target for propaganda assaults.

Professor Aboltin further suggests that imports of a planned socialist economy are highly stable and by directing trade to such markets, the crisis-prone capitalist economies can avail themselves of a countercyclical trade balance. Evidence of stability in imports of the USSR is unimpressive. If we exclude Finland, Russia's imports from non-Soviet countries outside the Coordinating Committee fluctuated in value from an average of 194 million dollars in 1947-49 to 109 million in 1952-53 to 155 million in 1954-55. Moreover, aggregation hides extreme instability. For example, for the same periods, USSR imports from India averaged 14 million, 2 million, and 5 million dollars. In the case of Yugoslavia, imports varied from an average of 27 million, to zero, to 10 million dollars. For Latin America imports to the USSR fluctuated from 9 million, to .5 million, to 31 million dollars.

Western observers are encouraged to believe that far-reaching changes contributing to reduction of cold war tensions have occurred in the USSR since 1953, and there is widespread impatience in this country at the laggard response of American statesmanship to this challenge. Professor Aboltin's paper supports the belief that the USSR may be emerging from the self-imposed economic isolation so evident in the contraction since 1917 in trade of the USSR with the West. Equally heartening is the growing evidence that the USSR intends to participate with the West in economic development of less developed countries by such institutions as trade, technical assistance, and economic aid. The contribution of our Russian colleagues to this volume is still another significant portent of the growing body of international economic co-operation.

MEASURING PRODUCTION IN THE USSR
INDUSTRIAL GROWTH IN THE SOVIET UNION

By G. Warren Nutter
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I

Economists are always measuring the unmeasurable, and indeed they must if they are to do what is expected of them. It is hard to think of anything more unmeasurable than Soviet industrial growth—or of anything more expected of economists than to measure it. In any event, it is my task to report to you on some of the preliminary and imperfect measures of Soviet industrial growth that have been devised in the course of a study, now approaching conclusion, at the National Bureau of Economic Research.[1]

In the few minutes available to me, I should like to place before you some indexes of Soviet industrial production and to give an elementary interpretation of what they say. In later reports, they will be discussed in much greater detail and compared with indexes constructed by other Western scholars. I would stress in these introductory remarks that broad indexes of production are, under the best of circumstances, only one kind of evidence useful for assessing growth trends. Their usefulness is much more limited in the Soviet case than ordinarily because of the basic unreliability of Soviet data, the swift and radical changes that have taken place in the Soviet economy over the last thirty years, and the great divergences among growth rates in different sectors. These matters cannot be adequately discussed here, but it is perhaps worth saying that, in my judgment, the best indexes that can be constructed fall far short of the reliability we have come to expect from Western indexes; and, on balance, they tend to exaggerate Soviet industrial growth.

It is, of course, a cardinal precept of scholarship that all details underlying conclusions of fact must be fully exposed to independent scrutiny by others. Unless a line of reasoning can be reproduced in detail, final judgment on its validity must be reserved. This is particularly true in the present case, first, because complexities of index numbers are involved and, second, because the basic subject matter is so emotion-

[1] All data presented here are, of course, subject to later revision. This paper is merely a preliminary summary by the author of some work now being done at the National Bureau of Economic Research, and as such it has not been subjected to the normal process of review.

ridden. Since it is obviously out of the question to publish details here, the only feasible alternative to presenting production indexes in this paper is to withhold their publication until all required information can be put together under one cover. There is much to be said for that alternative. However, such a practice has not been customary when the preliminary findings are to be subjected to a rigorous accounting in forthcoming publications.[2] In the present case, those scholars who wish to examine the underlying data before they are published are invited to inspect worksheets and to obtain a set of mimeographed documents on request to the National Bureau of Economic Research.

II

Three types of indexes have been constructed, measuring, respectively, production of industrial materials, finished industrial products, and all kinds of industrial products. The last, as we shall see, is not simply the sum of the first two. Production in each year is measured for the Soviet territory of that year—in the case of 1913, for the interwar territory. The effects of territorial expansion are, therefore, reflected in the indexes.[3] In order to make best use of Soviet data, the Soviet definition of industry has been followed; it encompasses mining, manufacturing, electric power, timber cutting, and fishing. Official Soviet output data have been used, except for adjustments to include small-scale production that are fully explained in mimeographed documents.

The industrial materials index represents an effort to measure production at an intermediate stage of fabrication, in the manner employed by Geoffrey Moore in his well-known study of industrial production during wartime in the United States.[4] The primary advantage of such an index is that it circumvents the enormous measurement problem created when an economy radically alters its mix of finished products, as the Soviet economy did during the thirties. The name "industrial ma-

[2] Custom should not be used to justify something otherwise unjustified. In the present case, the ultimate reason for a preliminary report of findings is the intense topical interest in the subject under discussion.

[3] During and after World War II, the Soviet Union acquired the Baltic countries, about half of Poland, a part of Rumania, and some other scattered regions. Territory was expanded by 700 thousand square kilometers (an area larger than France) and population by more than 20 million people. The enlarged territory slightly exceeds in area the Czarist territory of 1913, and the population of the former was not much smaller in 1913 than the population of the latter. It is impossible to make an accurate and precise measurement of the industrial gains attributable to territorial expansion as they had been realized by 1955. The gains may be roughly indicated, however, by the fact that in 1913 industrial production was about 18 per cent higher within the Czarist territory than within the interwar Soviet territory. If this were taken as an estimate of industrial gains from territorial expansion, then such gains could be eliminated from the calculated production indexes by reducing them by about 15 per cent for recent years. For example, the index for industrial materials with 1928 weights (see Table 1) would read 468 instead of 550 for 1955, and the same index with 1955 weights would read 394 instead of 463.

[4] *Production of Industrial Materials in World Wars I and II* (National Bureau of Economic Research, *Occasional Paper 18*, 1944).

terials" somewhat oversimplifies the nature of the index; it in fact covers thirty-seven intermediate industrial products (as metals, fuels, construction materials, and so on) and seventeen "basic" nondurable consumer goods (as flour, butter, fabrics, and so on)—fifty-four products in all. The index has been constructed on the basis of both 1928 and 1955 prices, the prices being adjusted wherever necessary to exclude the cost of nonindustrial materials used in production. Both forms of the index have been calculated with full product coverage for certain bench-mark years (1913, 1928, 1932, 1937, 1940, 1945, 1950, 1955), dictated essentially by the practices of Soviet statistics. Annual interpolations have been made with less complete coverage, varying from period to period but as large in each case as available data permit. The results are given in Table 1.

TABLE 1

PRODUCTION INDEXES: INDUSTRIAL MATERIALS, SOVIET UNION*
(1913=100)

Year	1928 Weights	1955 Weights	Year	1928 Weights	1955 Weights
1913	100	100	1933	137	133
1914	113	121	1934	162	158
1915	111	125	1935	187	178
1916	113	140	1936	223	207
1917	94	119	1937	229	211
1918	33	45	1938	236	217
1919	24	31	1939	242	224
1920	23	32	1940	254	232
1921	25	37			
1921–22	34	49	1945	148	142
1922–23	43	54	1946	172	162
1923–24	53	62	1947	205	192
1924–25	77	83	1948	250	227
1925–26	93	99	1949	298	274
1926–27	99	97	1950	338	300
1927–28	100	99	1951	381	338
1928–29	109	106	1952	411	359
1930	124	127	1953	457	389
1931	130	133	1954	497	421
1932	131	130	1955	550	463

* No scholar can be expected to pass final judgment on these index numbers without examining underlying data and specific procedures used in constructing them. These details cannot be published here for lack of space, but they may be found in worksheets and mimeographed documents available on request. Full details will be published on completion of the study at the National Bureau of Economic Research. This statement applies, also, to the other tables and to Chart I.

The second index tries to measure output of the "final" products of industry, so to speak. It covers machinery, construction materials, and

consumer goods of all types—over 100 products in all.[5] These categories do not, of course, exhaust all final products of industry; in particular, a substantial fraction of fuel output is consumed outside the industrial sector, just as a sizable fraction of construction materials is consumed within it. There is, however, no feasible way to separate these dual uses of products. Similarly, military end items are not covered because of a lack of data.[6] Some of the covered products (machinery and consumer durables) involve advanced stages of fabrication, while others (consumer nondurables and construction materials) do not. This index should, therefore, represent growth trends at most relevant stages of fabrication. At the same time, the great difficulties in measuring output of some kinds of heterogeneous machinery mean that this index is, in some important respects, less reliable than the index of industrial materials. As in the case of industrial materials, both 1928 and 1955 weights have been used in constructing this type of index, although only bench-mark years are covered.

The third index is of the "comprehensive" type, covering those industrial products of all kinds for which reasonably continuous output data are available. In all, over 130 products are included in the index.[7] Two weighting systems have been used: value-added for 1928 and employment for 1955. It has been possible to reconstruct, by generally reliable procedures, a rather detailed industrial breakdown of value-added in 1928. Wherever value-added covers a group of products, their outputs have been weighted by prices, net of the cost of nonindustrial materials. The products in the index account for about 70 per cent of total value added by industry in 1928. The index has been constructed with direct weights; that is, the weights assignable to missing products have not been imputed elsewhere. Since the employment data for 1955 are available for only broad industrial categories, it is impossible to estimate the fraction of industrial employment accounted for by the covered products in that year or the extent to which weights have been necessarily imputed in constructing the index. Here, again, weighting within industrial categories is done by prices—in this case for 1955.

[5] The product coverage is larger for the index weighted with 1955 prices (135 products) than for the one weighted with 1928 prices (102 products). The greatest variation in coverage is in the machinery sector, the former index including 81 machinery items and the latter 52. Some of the machinery series cover only short time spans, and they have been incorporated by the device of chaining together link indexes that have varying product coverage.

[6] It is interesting that the index for finished products declines between 1937 and 1940, whereas the index for industrial materials rises (see Table 2). Similarly, the former is much lower for 1945 than the latter. Both instances suggest that the index for industrial materials reflects production of military goods, at least in part.

[7] For the index weighted with 1955 prices, 165 products are covered, 81 being machinery items (see note 5 above); for the index weighted with 1928 prices, 131 products are covered, 52 being machinery items.

Six basic production indexes result from these calculations, as shown in the first six columns of Table 2. Two additional indexes (the last two columns) are also shown to indicate the effect of including and excluding extremely heterogeneous categories of machinery.[8] The indexes all differ, and some of the divergences among them are quite substantial. For example, industrial production is shown as multiplying over a range of 3.8 to 7 times between 1913 and 1955. The wide divergence of behavior, when coupled with knowledge of the concrete shortcomings of each index, makes it reasonably clear that there is no single best way to construct a Soviet index. It should also be emphasized

TABLE 2

INDUSTRIAL PRODUCTION INDEXES: SOVIET UNION, BENCH-MARK YEARS*
(1913=100)

	Industrial Materials		Finished Industrial Products		All Industrial Products (Excluding "Other Machinery"†)		All Industrial Products (Including "Other Machinery")	
	1928 Weights	1955 Weights	1928 Weights	1955 Weights	1928 Weights	1955 Weights	1928 Weights	1955 Weights
1913	100	100	100	100	100	100	100	100
1928	100	99	97	92	101	107	101	107
1932	131	130	134	120	140	145	143	150
1937	229	211	246	188	255	238	260	249
1940	254	232	234	180	278	231	282	243
1945	148	142	94	80	161	104	163	110
1950	338	300	378	243	403	335	425	367
1955	550	463	582	385	662	488	695	537

* See footnote to Table 1.

† "Other machinery" includes all types of machinery except agricultural equipment, transportation equipment, and consumer durables.

that none of these indexes is based on anything approaching the amount of verifiable data encompassed in standard indexes of industrial production used in most Western countries. Hence none can be considered an accurate measure, by Western standards, of what it purports to measure. In my own judgment, the two industrial materials indexes are the most satisfactory indicators of general growth trends, primarily because they are not sensitive to the essentially insurmountable problems of identifying and pricing relevant physical units in the swiftly and radically changing mix of producer durables.

It will be noted (Table 2) that each of the indexes based on 1928 weights shows a more rapid rise over the Soviet period as a whole than its counterpart based on 1955 weights. With one exception (nonfer-

[8] The "other machinery" category includes 46 items in the index weighted with 1955 prices, and 29 items in the index weighted with 1928 prices.

rous mining and metals), the same thing holds for indexes applying to subgroupings of industries, like "ferrous mining and metals," "fuel and electricity," and so forth (see Table 3).[9] The greatest divergences occur between alternative indexes for subcategories of intermediate industrial products, machinery, and consumer durables; the divergences between alternative indexes for food and for textiles are relatively small, at least as far as the Soviet period as a whole is concerned. The slowest rising of the over-all indexes based on 1928 weights (industrial materials) shows a more rapid rise than the fastest rising of the over-all indexes based on 1955 weights (all industrial products).

A similar relationship between "early-year" and "late-year" weighted production indexes has been observed for other countries, and the usual explanation runs in terms of supposing that the industries with fastest growth are also those with greatest technological advance—which is to say, with greatest decline in relative costs or prices. Despite the fact that Soviet prices do not accurately measure costs—as a growing volume of discussion in Soviet journals verifies—the changes in the price structure over time do seem, by the evidence inherent in production indexes, to reflect the broad directions of changes in relative costs.

There are, of course, no universally relevant criteria for choosing among early-year weights, late-year weights, and any mixed system of weights. Other relevant considerations the same, mixed systems are generally preferred, particularly if the weight bases are moved along so that they are never far removed from each relatively short span of time over which production is being measured. Unfortunately, other things are not the same in the case of Soviet indexes, to say nothing of the lack of data needed for elaborate weighting schemes. It has therefore seemed best to present the indexes as they come out, without attempting to combine them at this stage with some compromise weighting system.

III

With all the various necessary qualifications in mind, let us look first at what the indexes suggest about long-term growth trends.[10] These trends are pictured in Chart I. In order to provide perspective, industrial production is shown for the last half century of the Czarist period as well as for the Soviet era; and this long sweep of Russian industrial production is compared with an equally long sweep of American industrial production. Great caution should be used in interpreting this chart since the production indexes covering the nineteenth century rest

[9] Another exception is consumer goods taken all together. Yet for each subcategory (as textiles) the index with 1928 weights rises faster than the one with 1955 weights.

[10] The discussion here will be entirely in terms of raw growth rates, unadjusted for growth in population. Average annual growth rates for population (as derived from official

TABLE 3

INDUSTRIAL PRODUCTION INDEXES: INDUSTRIAL GROUPS, SOVIET UNION, BENCH-MARK YEARS*
(1913=100)

	Intermediate Industrial Products											
	Total		Ferrous Mining and Metals		Nonferrous Mining and Metals		Fuel and Electricity		Chemicals		Construction Materials	
	1928 Weights	1955 Weights	1928 Weights	1955 Weights	1928 Weights	1955 Weights	1928 Weights	1955 Weights	1928 Weights	1955 Weights	1928 Weights	1955 Weights
1913	100	100	100	100	100	100	100	100	100	100	100	100
1928	108	95	88	87	97	99	149	127	145	138	89	86
1932	199	161	134	136	197	217	321	250	268	252	145	142
1937	378	257	366	362	567	617	663	481	567	464	196	189
1940	433	270	376	372	844	924	848	607	580	447	192	187
1945	301	150	237	233	617	677	706	489	245	169	90	88
1950	681	396	542	530	1,262	1,407	1,394	904	1,000	778	274	261
1955	1,145	610	917	900	2,267	2,624	2,439	1,429	1,513	1,124	420	392

	Consumer Goods							
	Total		Food and Allied Products		Textiles and Allied Products		Consumer Durables	
1913	100	100	100	100	100	100	100	100
1928	96	110	83	82	111	132	159	122
1932	97	114	88	97	106	123	708	328
1937	153	168	143	138	154	182	3,670	678
1940	166	182	150	137	178	213	2,233	441
1945	69	78	67	72	72	83	354	53
1950	186	196	165	148	190	217	6,183	1,103
1955	312	316	242	227	339	333	16,784	3,125

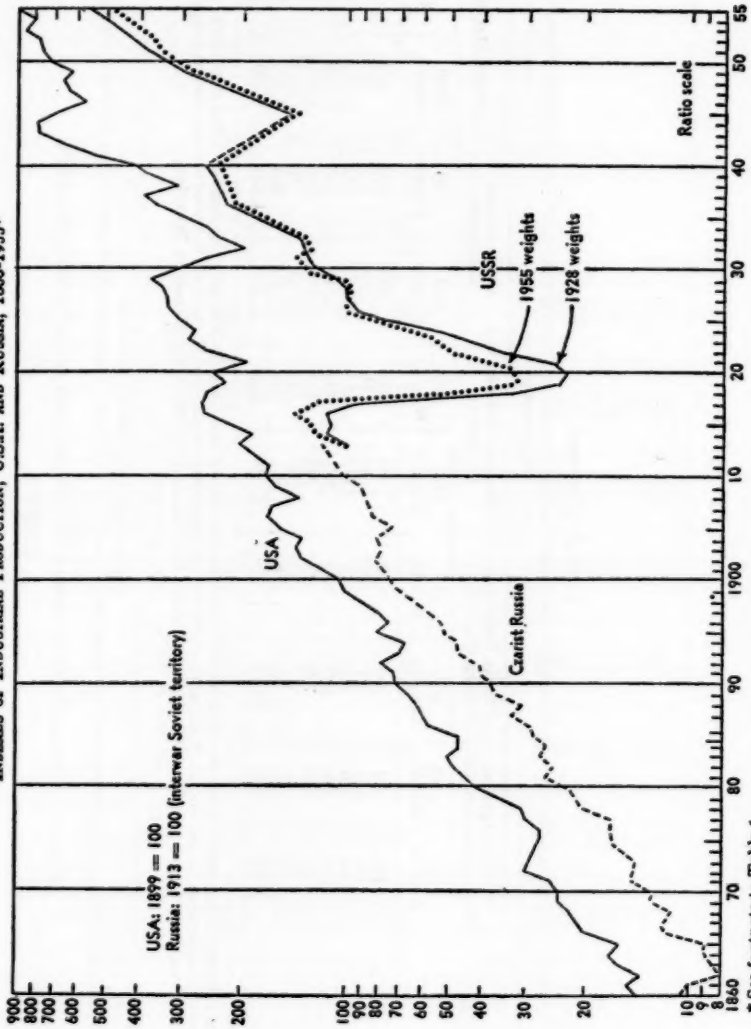
TABLE 3—(*Continued*)

	Machinery									
	Total Excluding "Other Machinery"		Total Including "Other Machinery"		Transportation Equipment		Agricultural Equipment		Other Machinery	
	1928 Weights	1955 Weights	1928 Weights	1955 Weights	1928 Weights	1955 Weights	1928 Weights	1955 Weights	1928 Weights	1955 Weights
1913	100	100	100	100	100	100	100	100	100	100
1928	106	129	117	129	59	81	250	227	179	128
1932	296	239	410	274	227	194	507	332	1,020	672
1937	868	499	967	564	973	490	545	515	1,498	1,300
1940	636	338	769	423	752	402	278	206	1,486	1,389
1945	248	79	321	132	307	102	65	30	713	750
1950	1,518	784	2,190	1,009	1,683	773	1,010	803	5,789	3,594
1955	1,869	890	2,945	1,262	2,028	820	1,377	1,031	8,709	5,555

* These indexes are components of the over-all index for "all industrial products" (see Table 2). The basic grouping is in terms of industrial products (*a*) delivered to enterprises for use on current accounts (called here "intermediate industrial products"), (*b*) delivered to enterprises on capital account (called here "machinery"), and (*c*) delivered to consumers (called here "consumer goods"). See footnote to Table 1.

CHART I

INDEXES OF INDUSTRIAL PRODUCTION, U.S.A. AND RUSSIA, 1860-1955*



* See footnote to Table 1.

on foundations that are weaker in some respects than those underlying indexes for the Soviet Union.[11]

These charted trends suggest three things about Soviet industrial growth. First, when viewed from the terminal dates 1913 and 1955, it has been roughly consistent with the growth trend established by Russian industry during the last half century of the Czarist period, which seems in turn to have been remarkably similar to the concurrent growth trend for American industry. Second, and when viewed in the same way, it has proceeded at about the same average pace as American industrial growth over the same period (i.e., 1913-55). And third, it has displayed short spurts of growth, following recovery from economic catastrophies, that have been more rapid than anything similar experienced in the United States, with the exception of the extraordinary American industrial effort during World War II. These observations must be tempered by noting that the Soviet trend line, as defined here, has so far been the ceiling for industrial production: production has twice dipped far below the trend line (in the twenties and forties), while it has not yet succeeded in piercing through it. This is merely to say that the average annual growth rate computed from output in terminal years is substantially higher than the rate achieved on the average year in, year out, so to speak. Put another way, the aggregate production accumulated over the forty-odd years of the Soviet era has been considerably smaller than the aggregate implied by the average growth rate computed from output in terminal years.

These visual impressions are confirmed by a closer look at the numerical data (see Table 4). For this purpose, all the indexes in Table 2 will be used to estimate the range of Soviet growth rates. We

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statistics) are as follows for the Soviet Union (or Russia) and the United States, respectively: 1860-1913, 1.4 per cent and 2.2 per cent; 1913-55, 0.9 per cent and 1.3 per cent; 1928-55, 1.1 per cent and 1.2 per cent; 1928-40, 2.2 per cent (from territorial expansion) and 0.8 per cent; and 1950-55, 1.7 per cent and 1.7 per cent. One important reason for adjusting growth rates to a per capita basis is to make allowance for differing sizes of the economies that are being compared. In the case of the Soviet Union, however, there are great difficulties in interpreting the meaning of per capita growth rates. There is, for example, the paradox that per capita output was increased when millions starved to death in the twenties, thirties, and forties; the increase in per capita output took place because a large fraction of the population was economically unproductive—had a marginal product of zero. Starvation meant fewer mouths to feed without a commensurate reduction in productive capacity.

[11] For this broad look, Soviet production is measured by the two industrial materials indexes; Czarist production, by an index constructed by Dr. Raymond Goldsmith, which is essentially an improved modification of the well-known Kondratiev index; and American production, by standard indexes of mining, manufacturing, and electric power, combined together by a moving system of value-added weights. The graphs of the Russian and American indexes are placed arbitrarily on the chart in the sense that they should not be taken as indicating the relative levels of industrial production in the two countries; that is to say, the vertical distance between the graphs should not be compared with the distances beneath the graphs in order to measure relative differences in production.

note that the average annual growth rate for the Czarist period 1860-1913 is 5.3 per cent, a rate higher than the highest estimate for the Soviet period (4.7 per cent). The Czarist rate is about the same as the American rate for the concurrent period. The American rate for 1913-55 (3.8 per cent) lies within the range of rates for the Soviet Union over the same period (3.3 to 4.7 per cent).

TABLE 4

COMPARISON OF AVERAGE ANNUAL GROWTH RATES OF INDUSTRIAL PRODUCTION: SOVIET UNION, UNITED STATES, AND CZARIST RUSSIA*
(PER CENT)

	Period	Growth Rate†
Czarist Russia	1860–1913	5.3
United States	1860–1913	5.2
Soviet Union	1913–55	3.3– 4.7
United States	1913–55	3.8
United States	1885–1920	4.9
Soviet Union	1928–55	5.4– 7.4
United States	1928–55	3.7
United States	1885–1912	5.2
Soviet Union	1928–40	6.8– 8.9
United States	1928–40	1.8
United States	1939–51	6.2
Soviet Union	1950–55	7.7–11.7
United States	1950–55	4.6
United States	1939–43	21.0‡

* See footnote to Table 1.

† Computed from output in terminal years. For the Soviet Union, the lowest and highest rates for all indexes in Table 2 are given. For the United States and Czarist Russia, source is Chart I.

‡ Based on Federal Reserve Board index of industrial production, which has been widely criticized as exaggerating growth. Geoffrey Moore's index of industrial materials production shows an average annual growth rate of 10.5 per cent for 1939–42.

These data suggest a long-run tendency in both countries for industrial growth rates to slow down, or retard, as the level of production gets higher.[12] It may therefore be informative to compare growth in the Soviet Union and the United States over the respective periods in which industrial production started from about the same level. In earlier studies reported on last year,[13] we estimated that the Soviet

[12] The question whether there has been a long-run tendency for aggregate industrial production to retard in the United States (for example) is highly controversial, and the evidence presented here must be regarded as quite inconclusive. For a discussion of the analytical problems involved, see Arthur F. Burns, *Production Trends in the United States Since 1870* (National Bureau of Economic Research, 1934), pp. 253 ff.

[13] See my "Some Observations on Soviet Industrial Growth," *A.E.A. Papers and Proceedings*, May, 1957, pp. 618-630, reprinted by the National Bureau of Economic Research as *Occasional Paper 55*.

levels of industrial production in 1913 and 1955 corresponded roughly with American levels in, respectively, 1885 and 1920. This would imply a higher average annual growth rate over the 35-year American period than over the 42-year Soviet one; and this implication is confirmed by the data in Table 4, which show industrial output growing by 4.9 per cent a year in the United States over the period 1885-1920 and by 3.3 to 4.7 per cent a year in the Soviet Union over the period 1913-55.

As to the shorter periods of Soviet industrial growth, it seems reasonably clear that there are no similar periods in American industrial history that fully duplicate the rapidity of Soviet growth from 1928 to 1955, although the American period 1885-1912—when production started at about the same level—comes close. Among recent years, the American period 1939-51 is perhaps most comparable to the Soviet period 1928-40, in that it, like the Soviet period, followed a decade of depression and stagnation; here, again, the American growth rate falls short of the Soviet one, though not by a great deal. The most recent short period of rapid growth—1950-55—has no counterpart in normal American times; it does not appear unusual when compared with our period of wartime mobilization (1939-43), though the initial heavy unemployment in the latter case must be taken into account.

The great contrast between these short-term rates and the long-term trend raises questions as to what is to be considered the "normal" rate of Soviet industrial growth. Arguments can be made for paying more attention to the rapid growth achieved in the absence of war and similar turbulence and less attention to the averaged-out growth. I cannot subscribe fully to these arguments for two basic reasons. First, in both relevant short periods—1928-40 and 1950-55—the Soviet Union has been able to drive her people much harder and to introduce new resources and technology into the industrial economy much more rapidly than can be sustained year in, year out over a long period. The Soviet successes in these periods are attributable in part to the rather normal willingness of people to sacrifice in order to overcome economic misfortunes and to make up for lost time.[14] There are other examples—such as West Germany and Japan in postwar years—of extremely rapid economic growth in periods following catastrophes. Second, the data themselves indicate that retardation in growth has occurred at a marked rate once the short spurts of growth have brought production back close to the long-term trend. Thus a sharp retardation began in 1937, strengthened, to be sure, by Stalin's purge; and a similarly sharp retardation has set in within the last two years, as confirmed by the recent abandonment of the Sixth Five-Year Plan. So far, the short spurts

[14] One must also take into account the benefits derived by the Soviet Union from its (earthbound) Satellites during the postwar years.

of growth have at best succeeded in bringing the long-term growth rate for Soviet industry approximately up to the concurrent long-term rate for American industry.

IV

How, then, might we describe the Soviet achievement? This depends in part on whether we wish to view the bottle as half full or as half empty. There has been, on the one side, a widespread belief that the Soviet industrial achievement is unprecedented, that nowhere else has so much been done so quickly. This belief is not, it seems to me, supported by the facts. Nor is the widespread belief on the other side; namely, that there is nothing impressive about Soviet industrial developments. If American industrial growth has been impressive in its rapidity, then so has Soviet industrial growth.

One thing is clear: The myth of industrial growth that is embodied in the official Soviet index of industrial production should be revealed and dispelled, once and for all. In each speech he now makes bearing on the subject, Khrushchev cites Soviet industrial production as multiplying some thirty-odd times since 1913, and he then compares this with growth in Western countries, especially the United States, as shown by their standard production indexes. According to the official Soviet index, industrial production is said to have grown at the following average annual rates: 1913-55, 8.2 per cent; 1928-55, 11.9 per cent; 1928-40, 16.8 per cent; and 1950-55, 13.1 per cent. The gross exaggeration in every rate is apparent from a glance at Table 4 (derived from indexes based on Soviet data but computed by Western methods) and needs no further comment here.

In comparing industrial growth in the Soviet Union and the United States, the vast differences in the character of growth in the two countries must always be kept in mind. In the United States, growth has come primarily out of the voluntary processes of a free market. Nobody "ordered" the growth to take place, and until the last few decades most people were quite unaware of precisely how rapidly it was taking place. As a consequence, the production of consumer goods has expanded at about the same pace as production of capital equipment and much faster than other end products like armaments. There has been concurrently rapid growth in other sectors, like construction and services. Similarly, some potential growth in production has been sacrificed, as a matter of voluntary choice, in favor of steady growth in leisure. In the Soviet Union, growth has been directed from above, with little regard for the wishes of consumers. The production of consumer goods has grown scarcely more rapidly than the relevant consumers themselves, while capital goods and armaments have been emphasized; leisure

has most likely not grown at all. Other sectors of the economy like construction and services have been grossly neglected. Had all this not been the case, it is extremely doubtful that industrial production indexes would have recorded such a large rise as they have.[15]

Our eyes wander irresistibly toward the future, and we must wonder whether and in what respects Soviet industrial growth might outdistance our own. Nobody can see a certain answer to that question. This much does seem evident: The record to date shows that the rate of industrial growth in the Soviet economy has probably not exceeded, on an over-all and sustained basis, the rate in the American economy over comparable periods. Many things may happen in the future to alter the picture, and one must always stand ready to revise an appraisal. For the moment, there is nothing to be gained by reading more into the available evidence than is there.

Let me conclude by stating once again that no scholar can be expected to pass final judgment on the production indexes given in this paper without examining the underlying data and specific procedures used in constructing them. These details cannot be reproduced here for lack of space, but they can be found in worksheets and mimeographed documents available on request. Full details will be published on completion of the study at the National Bureau of Economic Research.

[15] The argument here is in part rather technical. The essential point is that a heavy concentration of productive effort on products where large gains in technology and economies of scale are expected can bring about a faster percentagewise growth everywhere than would be otherwise accomplished. A shift away from such a heavy concentration would, by the same line of reasoning, bring about a recorded decline in growth rate or even possibly in total output.

SOVIET TRANSPORTATION DEVELOPMENT: A COMPARISON WITH THE U.S.*

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Soviet freight transportation, measured in ton-miles, first exceeded the prerevolutionary level in 1928. By 1955, it stood at 1006 per cent of the 1913 level. Professor Nutter has presented various indexes of Soviet industrial production which show it as multiplying over a range of 3.8 to 7 times during the same period. Economic growth has been accompanied by a substantial lengthening of the average haul of freight; hence a more rapid increase of freight ton-miles than of physical output would be expected. Tons originated by carriers of all types cannot be aggregated either in the Soviet Union or in the U.S. without introducing duplications of unknown magnitude. Yet a closer correspondence would be expected between tons originated and aggregate production.

Comparisons of the development of freight traffic in the two countries must take account of the fact that the transportation systems by which the movement is accomplished differ greatly. Yet each system springs logically enough from the conditions under which it was fostered and nourished and each has fulfilled reasonably well the requirements which economic development has placed upon it. The variety and complexity of American transportation is not widely understood; hence some discussion of the part played by the several types of carrier here will be necessary.

From the point of view of its transportation plant and the allocation of freight and passenger traffic among the several agencies of transportation, the Soviet economy is and always has been a railroad economy. Despite the emphasis placed upon the development of other forms of transportation in Soviet transport literature and despite considerable investment in waterway improvements, the railroad has become a more important method of transport than in earlier periods. Whereas in 1913 the railroads handled 61 per cent of total freight traffic, by 1940 they handled nearly 90 per cent. The economy of the U.S. has never been so greatly dominated by rail transport as the Soviet economy has during and since the second war, and the trends in this country have been the opposite of those in the Soviet Union.

* This paper is based upon a more extensive account to be published shortly by the National Bureau of Economic Research as an *Occasional Paper*. It draws upon the data presented in that forthcoming publication which is the result of extensive research conducted as a part of the National Bureau's Soviet Economy Study.

All types of transportation have undergone some development in the Soviet Union. Water transportation ranks next to rail in significance and stands at slightly more than twice its prerevolutionary level, but it has rather steadily declined in relation to rail. The Soviet Union lacks a Great Lakes system and it lacks reasonably direct coastwise transportation except for very short hauls. The navigable rivers are circuitous, seasonal in their navigability, and poorly adjusted to the resource pattern. Not only are the Soviet inland waterways poorly located to tap basic resources long since prospected and to deliver them into the urban and industrial areas, but no waterways of importance exist in the areas of newer industrial development; nor are there any which can carry much east-west traffic, which has become of growing importance. Nature has not provided the conditions that will permit the fostering of water movement as an alternative to rail transport upon a large scale. But it appears that even the improved channels upon which considerable expenditure has been made are not used to their potential carrying capacity. The pressures under which plant managers work appear to result in strong preference for through rail service over rail-water service with the attendant delays from transfer of lading, and inadequate co-ordination appears to have been achieved between the rail and water authorities to encourage joint movements.

The pipeline system of the Soviet Union is of limited mileage and is generally composed of lines of twelve-inch diameter and less. Its role in Soviet transportation has been minor and, until the last three years, its percentage contribution to total freight traffic has been slowly declining. Recent extension of the net has increased its participation, but in 1955 it accounted for but 1.3 per cent of total freight ton-miles. The minor role of pipelines up to the present in all likelihood derives from the scattered distribution pattern of a comparatively small petroleum output. Few routes are apparent over which a sufficient volume could be moved to consuming areas to warrant the installation of large-diameter pipe with accompanying economy of materials inputs by comparison with rail or water transport.

Freight transportation by motor truck was virtually nonexistent in the Soviet Union before 1930. It then grew rapidly until 1936 and thereafter held at a steady level until the eve of war. The prewar level was attained early in 1947 and by 1953 ton-mileage had nearly quadrupled. The data on truck transportation are undoubtedly less inclusive and less reliable than those for other forms of transport. Moreover, nearly all truck transportation in the Soviet Union is of a type which is not included in the statistics available for the U.S. and for other Western countries; hence it should be and has been excluded from the aggregates of Soviet ton-miles which we use for comparison with U.S.

data. The average reported haul, probably overstated, was at a maximum of 13.4 kilometers in 1945 and declined steadily to 10 kilometers in 1952 and 1953. This is primarily traffic of the local cartage variety performed largely in urban and industrial areas and seldom extending beyond the limits of commerical zones. It is of the type excluded from the intercity transportation data of the U.S. It embraces local pick-up and delivery and local distribution services hitherto largely performed by horse dray as well as rural-to-rural movements which are also excluded from available U.S. data. Soviet policy is now to encourage the use of trucks for very short hauls, but to provide sharp incentives for employment of railroads for hauls beyond twenty kilometers because of the relatively high inputs required for truck transportation on any but the shortest of hauls as well as the nearly complete lack of improved highways.

Total Soviet freight transportation as used here for comparison with the U.S. is, therefore, the sum of the ton-miles produced by railroads, domestic water services, and pipelines. All components of this total are believed to be overstated. Moreover, the strictest comparability between Soviet and U.S. series cannot be obtained as respects concept and coverage. Soviet rail ton-miles, for instance, include a portion but not all of the company material moved. On the other hand, we employ the "tariff" ton-mileage series which represents ton-miles that would result from movement over the short-line distances whereas the U.S. data reflect the ton-miles which correspond with the movement actually carried out. Soviet tons originated are clearly overstated as a result of the common practice of showing on freight waybills more tonnage than is actually loaded in cars, although we cannot say by how much. In consequence, ton-miles are also overstated. We believe that the Soviet rail data are most appropriately compared with the U.S. net ton-miles, revenue and nonrevenue, and that such a comparison does not greatly misrepresent the relationship between the two over the years.

Table 1 traces the growth of ton-kilometrege on the various forms of transport. It will be observed that all intercity transportation quadrupled between 1929 and 1940, that the prewar level was attained in 1948, and that by 1954 it had been doubled. Since 1945, a remarkable stability has prevailed in the relationship of rail to other forms of transportation, rail traffic representing somewhat more than 89 per cent of the whole in each year. Some of the postwar growth is traceable to expansion of Soviet territory. For years up to 1940, the data are given for the interwar territory; for 1940 on, for the postwar territory. The acquired territories brought about 7 per cent of additional railway mileage into the system.

The assembly of total ton-miles of all forms of domestic U.S. trans-

portation for comparison with the Soviet data presents considerable difficulty and necessitates the inclusion of estimates which are of doubtful reliability. From such a compilation it appears that, whereas in the twenties railroads were accustomed to handle well over 60 per cent of the total volume, their share declined rapidly during the thirties until the American entry into the second war. By 1940 they handled only 46 per cent of the total. During the war, however, their share

TABLE 1

SOVIET FREIGHT TRAFFIC

(Billion Metric Ton-Kilometers)

Year	Rail	Inland Waterway (Powered)	Domestic Maritime	Pipeline	Total	Rail as Per Cent of Total
1913	65.70	26.20	15.10	0.33	107.3	61.2
1920	14.4	n.a.	n.a.	n.a.	n.a.	n.a.
1926	68.90	12.92	n.a.	0.39	n.a.	n.a.
1928	93.4	15.9	6.2	0.7	116.2	80.4
1930	133.9	22.86	10.03	2.23	169.0	79.2
1932	169.3	25.11	13.85	2.86	211.1	80.2
1936	323.4	31.1	16.66	3.55	374.7	86.3
1937	354.8	33.0	17.0	3.6	408.4	86.9
1938	370.5	32.0	18.8	3.9	425.2	87.1
1939	391.7	34.6	23.0	4.2	453.5	86.4
1940	415.0	35.8	21.6	4.4	476.8	87.0
1945	314.0	18.3	10.1	3.1	345.5	90.8
1946	335.1	19.9	12.4	3.7	371.1	90.3
1947	350.9	24.4	14.7	4.3	394.3	89.0
1948	446.4	30.9	16.6	5.0	498.9	89.5
1949	523.7	37.2	19.6	5.6	586.1	89.3
1950	602.3	45.5	21.2	6.2	675.2	89.2
1951	677.3	51.0	22.9	6.7	757.9	89.4
1952	741.5	57.1	25.8	7.2	831.6	89.2
1953	797.9	58.6	28.0	7.8	892.3	89.4
1954	856.8	61.7	28.2	10.2	956.9	89.5
1955	970.9	66.6	n.a.	13.9	1,079.6*	89.9

* Obtained by estimating domestic maritime traffic at 28.2 billion ton-kilometers.

increased rapidly and at the end of the war stood at nearly 62 per cent. Since that time there has been an almost uninterrupted decline to a share of only 42 per cent in 1955.

It is customary to leave coastwise and intercoastal transportation out of the reckoning in presenting statistics of U.S. transportation. To do so, however, ignores important traffic flows which are of great significance to our domestic economy and which compete with other types of transport; for other resource and movement arrangements would be essential in the absence of these flows, and a large portion, at least, would turn up in other forms of transport. Ton-miles must be esti-

mated, however, from data on tonnage carried and are, therefore, only approximate.

The data on motor truck transportation are also estimated, and the estimates have gone through several revisions in recent years. They are designed to show all ton-miles by motor vehicles between cities and also between rural areas and urban areas. They are designed to exclude rural-to-rural movements, city deliveries, and city movements

TABLE 2

UNITED STATES INTERCITY FREIGHT TRAFFIC

(Billion Short Ton-Miles)

Year	Rail	Inland Waterways	Coastwise and Intercoastal	Motor Truck	Pipeline	Total	Rail as Per Cent of Total
1889	84.0	19.2	16.6			119.8	70.1
1920	456.2	78.0	59.0		7.0	600.2	76.0
1926	490.8	93.0	158.0	5.0	19.0	765.8	64.1
1928	479.1	86.0	163.0	8.0	26.0	762.1	62.9
1930	423.2	78.0	160.0	12.0	33.0	706.2	59.9
1932	258.0	28.0	131.0	15.0	34.0	466.0	55.4
1936	375.3	86.0	192.0	28.0	40.2	721.5	52.0
1937	398.6	103.0	219.0	35.0	45.0	800.6	49.8
1938	320.2	60.0	202.0	40.0	42.5	664.7	48.2
1939	370.2	96.2	234.7	52.8	55.6	809.5	45.7
1940	411.8	118.1	243.4	62.0	59.3	894.6	46.0
1945	736.2	142.7	117.2	66.6	126.5	1,189.2	61.9
1946	642.7	124.0	229.7	81.7	95.1	1,173.2	54.7
1947	706.7	146.7	206.7	101.7	105.2	1,267.0	55.8
1948	688.7	161.8	210.5	115.5	119.6	1,296.1	53.1
1949	567.3	139.4	214.3	124.9	114.9	1,160.8	48.9
1950	628.5	163.3	233.0	170.2	129.2	1,324.2	47.5
1951	686.4	182.2	251.1	182.5	152.1	1,454.3	47.2
1952	651.4	168.4	248.1	184.1	157.5	1,409.5	46.2
1953	641.8	202.4	264.4	217.2	169.9	1,495.7	42.9
1954	577.5	173.7	270.2	214.6	179.2	1,415.2	40.8
1955	654.8	216.5	275.0	226.2	203.2	1,575.7	41.5

to contiguous suburbs. But the estimates are derived from sample counts and their representativeness has long been a matter of controversy. Substantial argument can be made that both the coastwise and intercoastal and the truck data included in Table 2 are understated, but they are the best estimates available.

As the rail share of American freight transportation has declined, the representativeness of the rail data has also declined. Whereas Soviet rail data will give a reasonable picture of transportation in the Soviet Union, the same cannot be said for the U.S. Motor transport in the U.S. accounts for the great bulk of the traffic which moves in less than

carload quantities and for a high proportion of the high-grade manufactures as well. The high value of this traffic is illustrated by the average revenues per ton-mile which, for the motor common carriers, approach five times the average rail ton-mile revenues. Hence, although the volume of truck transportation measured in ton-miles is but 35 per cent of the rail volume, it is productive of revenues which exceed rail gross freight revenues.

TABLE 3

TOTAL FREIGHT TRAFFIC, U.S. AND USSR

(Billion Short Ton-Miles)

Year	U.S.	USSR	U.S. as a Multiple of USSR
1889	119.8	n.a.	
1913	n.a.	73.5	
1920	600.2	n.a.	
1926	765.8	60.4*	12.7
1928	762.1	79.6	9.6
1930	706.2	115.8	6.1
1932	466.0	144.6	3.2
1936	721.5	256.7	2.8
1937	800.6	279.7	2.8
1938	664.7	291.3	2.3
1939	809.5	310.6	2.6
1940	894.6	326.7	2.7
1945	1,189.2	236.7	5.0
1946	1,173.2	254.2	4.6
1947	1,267.0	270.1	4.7
1948	1,296.1	341.7	3.8
1949	1,160.8	401.5	2.9
1950	1,324.2	462.5	2.9
1951	1,454.3	519.3	2.8
1952	1,409.5	569.6	2.5
1953	1,495.7	611.2	2.4
1954	1,415.2	655.5	2.1
1955	1,575.7	739.7	2.1

* For purposes of this comparison, maritime traffic is assumed to have been 6 billion ton-miles in 1926.

To compare Soviet and United States aggregate freight traffic, it is necessary to convert to a common unit of measure and the short ton-mile has been adopted for this purpose in Table 3. Between 1913 and 1955, freight traffic multiplied 10 times in Russia whereas in the United States it approximately tripled. U.S. freight traffic doubled between its pre-World War II peak in 1926 and its all-time peak in 1955. Over the same period Soviet transportation multiplied by 12. Thus while the volume of freight traffic in the U.S. in 1926 was 12.7 times the Soviet level, by 1955 it was only 2.1 times as great. In evaluating

these relationships it should, of course, be recalled that the U.S. product is probably somewhat understated while that in the Soviet Union is overstated. From the 1940 level, which was approximately 40 per cent of the U.S. level, Soviet transportation fell nearly 30 per cent by 1945, but by 1954 had attained slightly more than double the 1940 volume. The U.S., however, which experienced growth during the war, had by 1953 moved up to 166 per cent of the 1940 level and then experienced a slight decline. Although total U.S. freight transportation volume still is double that of the Soviet Union, railroad freight traffic in the Soviet Union now exceeds that of U.S. railways.

Transportation in the U.S. experienced its most rapid growth in several periods before the first World War. When that conflict broke out the nation had a comprehensive system which was relatively mature. The Soviet Union, on the other hand, inherited a rudimentary system of railways which was supplemented by primitive road and water transport. The country was ill-supplied with transportation and the system was certainly not to be regarded as mature. When territory is being opened out to an exchange system of economic relationships in the place of a subsistence form and when rapid industrialization is occurring, speedy growth can be expected in a rudimentary transport system—growth at rates which would hardly be expected to recur in a more mature system. There is some logic, therefore, in comparing Soviet transport development with earlier periods in the history of the American transport system.

In 1913, total freight traffic within the territory comprised by the interwar boundaries of the Soviet Union was at about the same level as that achieved in the United States in 1885, or 28 years earlier. Thus, we may speak of a Soviet lag behind the U.S. in volume of freight traffic as being about 28 years in 1913. In 1928, the lag was 42 years; in 1940, 34 years; in 1948, 42 years; and in 1955, 29 years. Hence, although the lag has been shortened in the two periods of most rapid development in Soviet freight traffic (1928-40 and 1948-55), it has not been shortened as compared with the level attained in prerevolutionary Russia. Put another way, the expansion of Russian freight traffic in the 42-year span from 1913 through 1955 was roughly the same, both absolutely and relatively, as the expansion of U.S. freight traffic over the 41-year span from 1885 through 1926. It should also be noted that Soviet growth over the postwar period reflects in part the gains from territorial expansion and in part the greater inclusiveness of some of the nonrail series.

Upon a per capita basis, the 1913 freight traffic for the interwar territory of the Soviet Union amounted to about 580 ton-miles per capita—an amount probably attained in the U.S. as early as 1872.

The Russian lag was, therefore, about 41 years in 1913. It was about 56 years in 1928. In 1955 it was about 50 years. Thus the Soviet Union has made little progress in terms of per capita freight traffic by comparison with the United States and the lag is greater now than it was in Imperial Russia before World War I.

Since the Soviet Union did not surpass 1913 performance for transport as a whole until 1928, the growth of Soviet freight traffic since that date has been rapid and substantial. Neither U.S. rail traffic nor total traffic has ever shown a similar rate of increase sustained over a period of this length. In the fifteen years following 1926—the year in which it first surpassed the 1913 level—Soviet rail traffic multiplied by six. The most rapid growth over a fifteen-year period in the recorded history of American railroads was from 1895 to 1910 when the volume nearly tripled. However, it appears from the Babson estimates of ton-miles, which antedate Interstate Commerce Commission statistics, that in the period 1877 to 1881 American railroad ton-miles more than doubled in the space of four years—a rate of growth for a short period which seems never to have been quite attained by the Soviet system.

The Soviet growth is a very solid accomplishment. Except for a brief period in the middle thirties, no substantial evidence has come to light which suggests that Soviet transportation inadequacies have in any material way limited the growth of other segments of the economy, although it is clear that Soviet industry labors under the burden of adjusting its operations to limited transportation capacity in ways unknown in the Western world. Four decades of intensive development of a limited rail network which have been characterized throughout by highly intensive use of the physical plant appear not to have diminished the capabilities of transport in relation to the economy as a whole. The period has been one of struggle to keep abreast of traffic, however. It has not been characterized by significant concentration on service improvement or on efficiency in the use of labor and consumable stores.

The emphasis now appears to be shifting toward modernization of plant and equipment which, however, Soviet writers concede will be a slow process as theirs is a rapidly expanding economy which requires further sharp increase in rail capacity. Recent literature suggests growing concern that postwar transportation expansion has not kept pace with the demands of the economy and that this failure may again inhibit growth in other sectors. Hence the emphasis is on further expansion, but with an economy of investment to be made possible by large-scale electrification and dieselization.

The very intensiveness with which the Soviet railways appear to use trackage and rolling stock has aroused distrust in this country of the claimed performance. Put another way, the reported mileage, motive

power, and equipment appear to be inadequate for the handling of so large a traffic. In consequence, such operating ratios as traffic density, locomotive miles per locomotive day, and freight car turnaround are reported at levels which depart from Western experience. We have already noted that Soviet rail traffic is undoubtedly overstated. We are also convinced that the car stock is understated, that certain data employed to compute operating averages are distorted in the original records because of pressures to attain norms, and that concepts are manipulated from time to time for the same purpose with resulting discontinuities in the statistical series. Operating averages are, therefore, subjected to a double influence which leads to significant overstatement. Time does not permit presentation of the evidence upon which these conclusions are based. Nor does that evidence permit a quantitative appraisal of the bias. Were it possible to secure more accurate measures, however, Soviet railroad performance would appear somewhat more plausible.

Nevertheless, it appears that the Soviet railroad system does make a much more intensive use of its capital plant than is achieved, on the average, by the railways of the U.S. and that it operates under conditions which are highly favorable to intensive working. Some, only, of the more important differences in operating conditions can be mentioned here and the evidence upon which this brief statement is based must be reserved for later publication. The nature of the problem to be explained will be better understood when it is noted that the Soviet railroads, according to their statistics, now handle a somewhat greater freight traffic than those of the U.S. with a line mileage which is somewhat under one-half that of the U.S., a freight car stock (measured in two-axle units whereas American units are almost invariably of four-axle type) slightly over half the U.S. stock, and motive power with an aggregate tractive effort that is little above one-half the U.S. figure.

Railroad transportation is something to be conserved and minimized under Soviet doctrine. There is no active competition between railroads or between railroads and other carriers. In effect, the shipper faces a single railroad administration and the position of the latter is strong. Of great importance is the full six-day work week and various labor practices designed to secure fuller utilization of the industrial plant, together with the established principle that transportation equipment should be loaded and unloaded seven days a week. Labor awaits the cars rather than the converse, and loading and unloading norms expressed in hours can practicably substitute for the demurrage tariff and its forty-eight hours free time which is common elsewhere. Weekly and monthly variations in loadings are less marked than in the U.S. as is the seasonal pattern of traffic; hence idle car time as a result of temporary declines in loadings is much less than in the Western countries. It is reasonably

clear that the average car is detained four days less by shippers in each turnaround than in the U.S. and that less delay is encountered in initial and final terminals both to empties and loads because of the steady operation of shipping and receiving installations.

Traffic between particular points tends to be concentrated over a single route since there is no competitive duplication of mileage. The railway, and not the shippers, routes traffic. Hence traffic tends to move in concentrated flows over a network which is quite simple in its layout and yard work is minimized. There is little development of branch lines and there has been little overbuilding. Hence traffic density over the Soviet system is much more even than in the U.S. and the average is substantially above ours. Much of our principal main-line trackage is, however, more intensively used than is any part of the Soviet system. The attainment of high freight traffic density is greatly assisted by the fact that the Soviet railways concentrate upon slow-speed tonnage movement at the carriers' convenience. Fast freight services are virtually absent and, although passenger traffic is heavy, it is moved outside the suburban areas in an infrequent service afforded by heavy slow-speed trains.

Throughout most of its history the Soviet railroad system appears to have worked under pressures which have been encountered in the U.S. only in wartime. It is still a system worked primarily by steam power, which is obsolete by American standards, and it offers a service quality which would compare roughly with that afforded by American railroads prior to the first World War. Somewhat limited evidence indicates that its labor, fuel, and maintenance inputs are heavier than they were in the U.S. during the age of steam in comparison with the traffic volume. But the system does move traffic and in very large volume. There are now signs of change that suggest that the balance of economic forces has altered sufficiently to permit movement in directions already pursued in the West.

DISCUSSION

HANS HEYMANN, JR.: In commenting on Dr. Nutter's paper, I should like to say at the outset that, in my view, the National Bureau of Economic Research deserves great credit for adding yet another appraisal to the lengthening list of independent estimates of Soviet industrial expansion that have appeared in recent years, this one based on what may turn out to be the most comprehensive reconstruction of Soviet physical output series that the West is likely to achieve. I also want to express my admiration for Dr. Nutter's patience and courage in carrying this arduous and frustrating assignment so near to completion. After studying the author's presentation of his preliminary findings, however, I do feel that he has done less than full justice to the importance and to the intricacies of his task.

Turning first to his discussion of the statistical methodology, it seems to me regrettable that Nutter contents himself at this point with a quite casual and ambiguous description of his indexes and fails to subject them to the kind of analysis that would permit us to form some opinion of our own concerning their reliability and meaning. Nutter's indexes are based on a compilation of many individual commodity series and their subsequent aggregation by means of certain chosen weights. The reliability of such indexes is critically dependent on the completeness of the product coverage achieved, the representativeness of this coverage relative to the total product mix, and the appropriateness of the weighting procedure followed. The author, however, reveals only a few tantalizing facts about the coverage of his indexes, tells us virtually nothing about the representativeness of his chosen series, and leaves us more than a little bewildered concerning his weights. We need only glance at the wide divergences of behavior of the various indexes in Table 2 and even more at the tremendous disparities among the subcategories of his indexes in Table 3, to realize how sensitive these measures must be to even minor changes in composition or weights. By what criteria did he select these forms of indexes and is there any likelihood that they lead to significant distortions? Nutter's discussion is hardly designed to allay our fears in this regard. He warns us that none of the indexes can be considered an accurate measure, by Western standards, of what it purports to measure and he implies that he is caught on the horns of a familiar dilemma: the more comprehensive he seeks to make the index, the less reliable it becomes. Nutter makes his choice on the side of greater reliability, at the expense of comprehensiveness. Thus he places his principal faith in his index of industrial materials. This index, apparently patterned after Geoffrey Moore, is recommended, not because of its superior conceptual virtues, but because, as he puts it, "it circumvents the enormous measurement problems." In other words, he seems to like it, not because it reliably measures the whole range of industrial output, but because it reliably measures a part of output; namely, that part which it is most feasible to measure. What we do not know is whether, on conceptual grounds, it deserves

to be considered as a satisfactory indicator of over-all industrial growth. Geoffery Moore, in discussing his original form of this index, was careful to point to its rather disturbing deficiencies, notably its tendency to understate industrial growth if there has been a relative increase in the physical quantity of highly fabricated goods—a relative increase that must certainly also be presumed to have occurred in the Soviet case. I have no doubt that Nutter has given these matters careful consideration, but without much more information about what he has done and why, it is simply not possible to evaluate his statistical results.

Turning now to the inferences that Nutter draws from these results, perhaps the least controversial of these is his conclusion that the official Soviet index enormously overstates Soviet industrial expansion. Here he certainly demonstrates a healthy divergence of his own figures from the propagandistic official Soviet claims. But the discovery of a heavy upward bias in the old Soviet index is hardly original with Nutter. No responsible Western scholar has taken this index seriously in quite a number of years. Moreover, Nutter neglects to distinguish between the old Soviet index, based on almost meaningless 1926-27 price weights and the more recent variant, based on 1952 price weights covering the years since 1950. While this new index also suffers from some upward distortion, its deficiencies appear to be of a very different order, and I do not believe that we are justified in dismissing this index as totally irrelevant. In this connection it is interesting to note Nutter's finding that, over the period 1950-55, his fastest growing index exhibits an average annual growth rate of 11.7 per cent, as compared with 13.1 per cent for the official Soviet index. Still a significant disparity, but nothing like the phenomenal exaggerations of the old index.

The main point of Nutter's discussion—and the one with which I find myself completely out of sympathy—is his attempt to focus our attention on an imaginary "long-term trend line" which he superimposes on his data by connecting his terminal years 1913 and 1955. Why 1913-55? Nutter is well aware of the misleading nature of this perspective. He expressed his doubts on this matter very effectively at last year's meeting on this same subject (and I quote from his previous paper):

> The years under review include the two world wars, a violent revolution, and a severe civil war—altogether some eleven years of turbulence, a fourth of the period. They also cover experience under both a planned and an "unplanned" economy, and these in turn have had disturbances of a severity that may not be encountered again. There are obviously questions raised about how trends are to be interpreted over times such as these.

And yet Nutter asks us to accept this violently abnormal and heterogeneous period as an adequate basis for establishing long-term trends, for judging Soviet economic achievements, and even for comparing the performance of "the centrally planned Soviet economy" with "the market-guided American economy." A glance at Nutter's graph and a quick recollection of the historic events that lie behind it should be sufficient to convince anyone of the futility of reading a meaningful long-term trend into such a period of history. And so I question the significance of Nutter's conclusion that the Soviet industrial growth rate, averaged out over this span of years, has not exceeded that

achieved in the United States or in Czarist times. Surely this is nothing more than a statistical result that has little relevance to an understanding of the nature of Soviet economic development and is totally lacking in predictive value.

Now what about the shorter periods of Soviet growth which Nutter rather grudgingly acknowledges as having been more rapid than anything similar experienced in the United States in normal times? I would certainly not argue that we should fix our eyes only at these periods or that we should assume that they, in turn, can be accepted as indicative of long-term trends. But I do feel that they deserve a more judicious appraisal than Nutter has accorded them.

For example, he asks us to compare the Soviet period of the early Five-Year Plans from 1928 to 1940 with the U.S. period 1939-51, on the grounds that both, as he puts it, "followed a decade of depression and stagnation." But surely the Soviet industrialization drive took off in 1928 from a condition of almost full recovery and with a production plant utilized to capacity, while the U.S. industrial expansion beginning in 1939 was facilitated by a large idle labor force and underutilized resources.

Nutter also notes the sharp retardation in Soviet growth that set in in 1937 and he implies that there is something inevitable and preordained about such a tendency, whenever Soviet production approaches his long-term trend line. But the drop in the rate of growth that he observes can be fully explained in terms of a conscious Soviet mobilization policy beginning in about 1937 which diverted manpower increments from the labor force into the armed forces and shifted resources from investment to defense.

As for the most recent period of rapid growth, 1950-55, Nutter notes that it has no counterpart in normal American times, but points to a "sharp retardation" that has set in within the last two years. Unfortunately, his data throw no light on this development, since they terminate with 1955. But I wonder whether the picture is really as comforting as Nutter seems to assume. The official Soviet index, which recorded an increase of industrial output of 12 per cent in 1955, dropped to 11 per cent in 1956, and to 10 per cent in 1957. Even if we allow for a very substantial and progressive distortion in this index, the reduction in growth that is likely to have occurred would hardly appear to be cause for jubilation on our part, particularly when viewed against the background of the trend in U.S. manufacturing output, which has grown not at all over the last two years.

Finally, looking toward the future, none of us can see with certainty the answer to the question Nutter raises: Whether and in what respects Soviet industrial growth might outdistance our own. But in looking at the Soviet economy today, we cannot content ourselves merely with a recognition of its cruelties and failures, but we must, with equal candor, face up to the unpleasant reality that this is a system that manages, year after year, to pour vast and growing resources into industrial investment, that consistently directs this investment into channels that yield high returns in basic economic growth and applied military power, and that has declared its determination and demonstrated its success in mobilizing the enormous potentialities of science

and technology in support of the economic and political objectives of the state. Such a system it would not be prudent to underrate.

HOLLAND HUNTER: Professor Williams has presented to you only the top of an iceberg—a summary of an occasional paper based on what he laughingly calls a "working memorandum" of some 240 pages. The iceberg is, I can assure you after close inspection, a handsome one. My remarks will represent no more than a few glancing reflections from selected points of this large mass. First, some comments on the role of transportation comparisons may be in order. Next, I offer a few judgments on the reliability issue. A third heading concerns U.S.-USSR growth comparisons; and I should like to end with two suggestions for further research in this field.

The volume of freight traffic in a growing economy has interested economists studying the USSR partly because it appears to provide a physical indicator of the volume of industrial production—that elusive beast we have been pursuing this afternoon. But I suggest that such an indirect approach is of doubtful meaning, and that production aggregates are better estimated directly. Freight traffic and industrial output, being two facets of a single process, have grown together in the USSR, but as we all know, mere covariation of aggregates does not reveal much about an interdependent economy. Current Soviet production and price data are sufficiently abundant so that I do not think we need any longer use freight traffic as an oblique indicator of growth.

Comparison between Soviet and American transportation does serve one valuable purpose, however, and here Professor Williams' contribution is of major importance. He is the first informed observer to bring out clearly the differences between the two systems in such a way as to explain how the Soviet system accomplishes what it does. There has been considerable doubt in the West concerning the credibility of Soviet railroad performance. Professor Williams has now unraveled most of the mystery for us. What does he find?

His general conclusion, if I understand him correctly, is that Soviet railroads really do most of what they claim to do. Most, but not all. For one thing, shippers and railroadmen are both under pressure to exaggerate the weight of what is shipped; so that traffic figures are somewhat overstated. Of course, if there is what Alec Nove has called a "law of equal cheating" at work, then officials have been exaggerating as much as they safely could for some twenty years. When I say that a volume of 110 in 1940 has grown to 220 in 1950, exaggerating both by 10 per cent, it is still true that 100 has grown to 200.

The coverage problems he investigates are frustrating and by no means confined to Soviet records. He is correct, I believe, in excluding truck traffic from the Soviet intercity aggregate. The most uncertain portions of the Soviet aggregate are the division between domestic and foreign maritime traffic and the excess of operating over tariff ton-kilometers; he excludes foreign traffic on a rough-and-ready basis and prefers not to include an estimate of the freight movement unrecorded on waybills. Yet in the end, his work and mine, together with the slightly different series in the new Soviet statistical handbook

on transportation, all show negligible differences in growth trends over time. The possible errors are probably no more serious than those associated with estimates of water and truck traffic in the United States.

The main portion of the explanation for Soviet railroad performance, as carefully reviewed in Professor Williams' underlying study, lies in the unusual conditions that favor intensive railroad operations in the USSR. Broadly speaking, much of what American railroads do for their clients complicates the railroads' work; the tendency of Soviet railroads is not to do these things. Consequently, the internal effectiveness of Soviet railroad operations can be brought to a high level, but their product certainly has no "frills." Their internal effectiveness itself, while impressive, is also shown by Williams to be measured in ways that differ from ours at points. For example, they appear to count only the hours a locomotive is actually at work in recording its daily mileage, and obviously therefore get higher figures than we obtain from using full calendar days. Or again, it seems that Soviet railroads are careless in counting their freight cars only occasionally, and that more are at work than their records show. As a result, a small discount must be attached to the very impressive performance averages of Soviet freight cars. In sum, when the claims are adjusted slightly and the nature of the service is appreciated, Williams finds that Soviet railroad operations are understandable and credible.

Turning now to growth comparisons between the USSR and the United States, I would like to enter two caveats. First, the time-lag method of comparison used by Professor Nutter in his December, 1956, paper and Professor Williams today is unstable and only a temporary sop to our vanity. Let me illustrate. Professor Williams shows that the Soviet aggregate of freight ton-miles in 1955 was reached by the United States in 1926, twenty-nine years earlier. But one year later, using 1956 Soviet ton-miles, this "lead" of twenty-nine years falls to seventeen years! The answer of course is that the method involves a leap across the 1927-38 period in the United States when aggregate traffic was not growing. There is no exorcising the fact that the 1957 Soviet economy is turning out a far larger fraction of 1957 American output than was true in comparing the 1913 Czarist economy with the United States in 1913.

The second caveat concerns the desirability of growth in specific contexts. Sometimes it is not wanted. As Warren Nutter pointed out last year, we have reduced our output of some commodities (like coal and soap) because preferable substitutes have appeared; Soviet "catching up" in coal thus takes on a different significance. In the case of freight traffic, we must note a contrary phenomenon. We tend to welcome a large volume of transportation capacity and freight traffic as contributing to our production. In Soviet minds, on the other hand, freight traffic is a thing to be minimized. The USSR does not particularly wish to catch up with us in the volume of freight traffic. The moral is, I think, that specific growth trends must be scrutinized in terms of desirability as well as mere speed.

In closing, it may be appropriate to suggest some questions on which further research in this field would be fruitful. The first concerns the efficiency

of various operating methods in handling railroad freight traffic. There would be mutual benefit in an exchange of information between American and Soviet railroadmen on operating methods. Both can take legitimate pride in some of their practices, and at the same time both show room for improvement in others. The second relates to estimating and comparing transportation costs, as among the various carriers, under various conditions. Our understanding of difficult, objective problems can be substantially furthered if Soviet and American economists compare their judgments in these matters. It would be a healthy manifestation if transportation specialists could play a leading role in widening the extent of scientific communication between our two countries.

CURRENT ECONOMIC QUESTIONS RELATING TO WESTERN EUROPE

THE LESSONS OF BENELUX AND THE EUROPEAN COAL AND STEEL COMMUNITY FOR THE EUROPEAN ECONOMIC COMMUNITY

By Raymond F. Mikesell
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While government administrators were working overtime during the early postwar period to devise measures for more completely insulating their national economies from those of their neighbors, their more internationally minded countrymen were drawing up blueprints for regional economic intergration. Perhaps the ridiculous extremes of economic nationalism in Europe and elsewhere have been responsible for the widespread popularity of the proposals for the creation of customs unions, limited common markets, free-trade areas, and economic unions. For a variety of reasons both economic and political, the emphasis has been on regional economic integration rather than upon a general lowering of trade barriers in accordance with the principles of nineteenth-century economic liberalism. Undoubtedly the greatest advances in freeing trade from quantitative restrictions and bilateralism in the postwar period have been made not by the General Agreement on Tariffs and Trade (GATT) and the International Monetary Fund (IMF), but by the European Payments Union (EPU), the Organization for European Economic Cooperation (OEEC), the Benelux Customs Union, and the European Coal and Steel Community (ECSC).

Many observers are convinced that regional economic arrangements providing for the removal of intraregional trade barriers and for a certain amount of co-ordination or unification of internal and external economic policies represent the most promising means of escape from the waste and stagnation of economic nationalism in the free world. By far the most ambitious of the regional trading arrangements to reach the treaty stage is the European Economic Community (EEC). The provisions of this Treaty and the environment for its acceptance were developed out of a rich experience with regional co-operation. It is the purpose of this paper to discuss certain aspects of the experience with Benelux and the ECSC which appear to have relevance for the EEC.

I must begin by pointing out that the experience with both Benelux and the ECSC has been too brief and the conditions under which they

have operated too specialized to provide definitive answers in most problem areas. For the most part, experience with these arrangements tends either to confirm certain lessons already in the textbooks or to uncover new problems for which solutions have yet to be found. The authoritative textbook on the economic integration of sovereign states will not be written for at least another generation. To date the history of Benelux, the ECSC, and other integration efforts provides little more than an outline for the course.

Limitations of space permit consideration of only a few aspects of the history of these European experiments which are relevant for the proposed European Economic Community. In this context my discussion will be confined mainly to: the problem of balance-of-payments equilibrium; harmonization of taxation; the conditions of competition; and the effects of regional arrangements on trade patterns.

The Problem of Balance-of-Payments Equilibrium

Perhaps the most important problem confronting countries seeking to establish a customs union has to do with the relationship between their internal economic structures and policies on the one hand, and their balance of payments on the other. The Benelux experience is significant in this area chiefly because it confirms some of the more obvious principles of economics.

Tariff barriers between the Netherlands and the Belgium-Luxembourg Economic Union (BLEU)[1] were abolished in 1948 and a common tariff on imports from third countries was instituted; but it was not until 1953 that quantitative restrictions (except for agriculture) were virtually eliminated on intra-Benelux trade and not until 1956 was a more or less complete co-ordination of trade and payments policies with third countries achieved. All restrictions on capital movements within Benelux were also removed in 1954.

Substantial progress toward the removal of quantitative restrictions on trade within Benelux was impossible so long as there was a sharp divergence between BLEU and the Netherlands with respect to their internal economic policies and the degree of external equilibrium. During the postwar period until 1951 the Netherlands was in substantial disequilibrium and sought to minimize her external deficits by means of severe restrictions on trade and payments with other countries. BLEU on the other hand experienced balance-of-payments surpluses and has maintained relatively liberal external trade and payments policies

[1] The BLEU came into existence during the interwar period. See James E. Meade, *The Belgium-Luxembourg Economic Union, 1921-1939* (International Finance Section, Princeton University, March, 1956). For a detailed analysis of the development of the Benelux Union, see James E. Meade, *Negotiations for Benelux: An Annotated Chronicle, 1953-1956* (International Finance Section, Princeton University, 1957).

throughout the postwar period. The internal economies of the two countries were also in sharp contrast. In 1948, Belgium had a relatively free economy with well-filled shops and high prices, while the Dutch economy was characterized by price controls, rationing, subsidies, and the regulation of investment. Belgium permitted inflationary forces to raise prices while seeking to control aggregate demand by means of monetary restraint. The Netherlands on the other hand kept interest rates relatively low and sought to contain monetary inflation by means of direct controls on wages and prices.

Free trade between an economy subject to price and rationing restrictions and one which is not obviously creates serious difficulties. The pent-up demand in the controlled area will inevitably spill over into the area which is relatively free from controls; thereby increasing the external deficit of the controlled economy. Not only were commodities of Belgian origin available to meet the unsatisfied demand in the Netherlands, but dollar commodities were also relatively abundant in the Belgian markets. When the Dutch freed a substantial portion of their imports from Belgium from quota restrictions in 1950, there occurred a flood of imports into the Netherlands, with a consequent rise in the Netherlands' EPU deficit (and in Belgium's EPU surplus). The imbalance finally resulted in an agreement in 1951 whereby Belgium imposed ceilings on exports to the Netherlands; in fact the whole Benelux scheme was in danger of foundering.[2] Fortunately, beginning with the second half of 1951 the Dutch balance-of-payments position was reversed so that the Netherlands was able to liberalize its imports while at the same time rebuild its gold and foreign exchange holdings.[3] By mid-1953, both the Netherlands and BLEU had liberalized 92 per cent of their imports from other OEEC countries from quota restrictions and in July, 1955, the two countries established common lists of liberalized imports which, with few exceptions, applied without discrimination to imports from both the dollar area and from the OEEC countries.[4]

While both the internal and the external policies of the Netherlands and Belgium have tended toward greater uniformity since 1951, the adjustment process has created difficulties for Belgium as well as for the Netherlands. As world markets became more competitive after 1951, certain Belgian firms found themselves with a substantial cost disadvantage as compared with Dutch firms. Dutch products began to flood

[2] William Diebold, Jr., *Trade and Payments in Western Europe* (Council on Foreign Relations, 1952), pp. 339-341.

[3] By the end of 1953, Dutch reserves of gold and foreign exchange exceeded Belgian reserves and the Netherlands had achieved a substantial creditor position in the EPU.

[4] On August 1, 1957, 86 per cent of the private imports of the Benelux countries from the dollar area were free from quota restrictions (calculated on the basis of 1953 imports).

Belgian markets in 1952, helping to create unemployment in Belgium. The lower wage and other costs in the Netherlands were in part a consequence of that country's policy of price controls in the early post-war period as contrasted with the existence of free markets in Belgium. Also, the Dutch guilder had been devalued by 25 per cent in terms of the Belgian franc in September, 1949. Thus while in 1951 temporary restrictions on Belgian exports to the Netherlands had to be applied in order to reduce the Dutch trade deficit, two years later the Belgians requested the establishment of formal machinery for instituting temporary controls over intra-Benelux trade to ease the shock experienced by particular industries when imports increased in substantial quantities.

Throughout the several stages in the formation of the Benelux customs union, conflicting approaches to the balance-of-payments problem were evident in the ministerial conferences. One approach favored co-ordination of the internal price, rationing and investment controls of the three countries, and the institution of common commercial and foreign exchange policies in their dealings with the rest of the world. Another approach argued for the achievement of over-all balance-of-payments equilibrium by each member as a prerequisite to the development of a common commercial policy toward third countries.

The second approach proved to be more nearly correct. If one member of a customs union is in over-all disequilibirum, the adoption of strict controls on imports from outside the union by the other members can have but limited, and perhaps only temporary, effectiveness in dealing with the disequilibrium condition. On the other hand, a full customs union by its very nature requires a common system of tariffs and other controls vis-à-vis third countries, since foreign goods imported into one country will move freely into the others. Each member's balance of payments is, however, influenced by the joint commercial policy of the customs union as well as by economic developments in the other member countries. Consequently, as Professor Meade has emphasized, co-ordination of domestic, monetary, and economic policies designed to keep movements in the general levels of money incomes, prices, and costs in the member countries in line with one another is quite important to the successful operation of a customs union.[5]

The Benelux experience would seem to indicate that the formation of a successful customs union or free-trade area requires the existence of relatively free internal economies and the maintenance of over-all external equilibrium without substantial reliance upon direct controls. It has been suggested that if two countries are in the same degree of external disequilibrium, they might be successful in establishing

[5] J. E. Meade, *Negotiations for Benelux: An Annotated Chronicle, 1953-1956*, p. 68.

free trade among themselves. I have serious doubts regarding this position, however, unless the countries are willing to establish a high degree of economic and political integration. There is no reason to suppose that two countries would want to control imports of the same types of commodities from the rest of the world, and differences in the pattern of controls would certainly affect the intraregional balance. Moreover, if both countries were in over-all disequilibrium, they would seek bilateral balance between themselves, since neither country would want to finance a deficit with the partner country with relatively scarce exchange available for making purchases, say, in the dollar area. In the case of the Netherlands and Belgium, it became relatively easy for them to establish a common trading policy with the rest of the world once both were in a strong over-all position. This was true in spite of the fact that the Netherlands has a continual deficit with BLEU.

On the other hand the Benelux experience does not indicate the necessity for a complete harmonization of internal economic policies. Until recently, Dutch monetary authorities have tended to maintain an easy money policy in contrast to the restrictive policies of the Belgian central bank, and before 1956 long-term interest rates in BLEU were usually a percentage point higher than in the Netherlands. This differential continued in spite of the common capital market within Benelux established in July, 1954.[6] However, there has been an increasing degree of similarity in both the policies and the techniques of control employed by the monetary authorities in the two countries, and in the latter part of 1956 inflationary pressures in the Netherlands led the Dutch authorities to raise the central bank discount rate above the Belgian discount rate.[7]

The fiscal policies of the Netherlands and BLEU are by no means fully co-ordinated, although there has been considerable progress in this area since 1951. In general the Netherlands has followed a compensatory fiscal policy, while the Belgian authorities have sought to avoid an unbalanced budget regardless of the state of the economy. In addition there have been differences in the tax structures between Belgium and the Netherlands, with turnover and excise taxes representing a substantially larger share of the tax revenues in Belgium. Since these taxes affect costs of production, certain Belgian producers have considered themselves to be at a disadvantage as compared with their Dutch competitiors.

[6] It may be noted that the existence of a free market rate for capital transactions which gives rise to a premium on Belgian francs in terms of guilders over the official rate employed for current transactions has tended to offset some of the yield differentials between Belgian and Dutch securities.

[7] In August, 1957, the Belgian central bank rate was 4.5 per cent and the Dutch discount rate was 5.0 per cent.

Differences in Money Wages

A much more significant source of cost differential has been the disparity in money wage rates. It has been estimated that in 1951, money wages (including social security taxes) were at least 35 per cent higher in Belgium than in the Netherlands, while before World War II Dutch wages were appreciably higher than in Belgium.[8] After allowing for differences in labor productivity, it is estimated that labor costs were on the average about 25 per cent lower in the Netherlands in 1951. Between 1951 and the first quarter of 1957, money wages in the Netherlands rose by about 35 per cent while in Belgium wages have risen by approximately 21 per cent.[9] Productivity has increased somewhat faster in the Netherlands than in Belgium since 1951, however, so that there probably still exists a significant differential in labor costs in favor of the Netherlands.

The important lesson to be drawn is that a successful customs union can be established while there are substantial differences in over-all labor costs. To the economist this may not be surprising, but it should be pondered by businessmen and politicians who regard labor costs, or even wage rates, as the sole detriment of competitive advantage. Moreover, the Benelux experiment was nearly destroyed by the Netherlands' balance-of-payments deficits with Belgium in 1951 at a time when the labor costs differentials in favor of the Netherlands were larger than they were later on when nearly all quantitative restrictions were removed and the Dutch balance-of-payments position was strong.

Harmonization of Taxes

One of the thorniest problems in connection with the formation of a customs union has to do with differences in internal tax systems. A theoretical answer to this problem is to say that, given the tax structures of the individual member countries, each country will produce and trade in accordance with the principles of comparative advantage as determined by all of the relevent factors including its tax structure. This argument is rejected by those who insist that where the relative burden of taxes on production costs as between industries within member countries differs from country to country, the existing tax structures do in fact interfere with the optimum allocation of resources within a common market.

A second approach, then, is to harmonize the tax structures so as to avoid any relative advantage to any industry in which the members of the customs union tend to be competitive. Thus a tax, the burden of

[8] See J. R. M. Van den Brink, "Benelux," *Amsterdamsche Bank Quar. Rev.*, 1953, pp. 50-51.

[9] *International Financial Statistics* (International Monetary Fund, October, 1957).

which is the same on all industries within the same country, would not need to be harmonized with a similar tax or even the absence of such a tax in another member country. Hence it could be argued that if one country had a high uniform corporate tax but no excise taxes, while the other country had a high uniform excise tax on all products or a uniform tax on all wages, the burden of the tax would be uniform on all industries and would not affect the comparative advantage of any item of trade.

A disadvantage of this approach is that it may be difficult to determine the relative burden of a tax as between industries since the effect of a given tax on the cost of production is determined by a number of complex factors peculiar to the structure of the economy. For example, in some cases a payroll tax may over time be shifted on to wage earners. Even if two countries had an identical tax, the relative effects on costs of production would not necessarily be the same in the case of industries in which the countries were competitive.[10]

But the subtleties of comparative advantage and of tax shifting are little understood by the industrialists and the politicians concerned with the welfare of particular industries and of their workers. A third approach, therefore, is the equalization of all taxes which affect the costs or the net profits of competitive industries. Thus the French representatives in the ECSC have tended to argue for the equalization of taxes on wages to finance social security benefits on grounds of equalizing competitive advantage. But the German industrialist, who pays a relatively high corporate profits tax, feels that he is at a disadvantage as compared with his French competitor.[11] Thus there exists pressure within members of customs unions for either a harmonization of all taxes or compensatory tax adjustments on trade, which tend to violate the concept of a completely free market.

While a full-fledged customs union—which meets the conditions of no border formalities—is conceivable without the harmonization of excise and turnover taxes, such an arrangement is probably not feasible. This is borne out by the experience of the Benelux customs union, the ultimate goal of which is full economic union.[12] On commodities sub-

[10] For a discussion of this problem, see *Social Aspects of the European Economic Cooperation* (Report by a Group of Experts, ILO, Geneva, 1956), pp. 65-69, and Appendix II (prepared by Professor Bertil Ohlin).

[11] Professor Meade has pointed out that international differences in taxation and other social policies which affect the level of profits may influence the flow of investment if, as is the case with Benelux and the proposed EEC, there is a free movement of capital. See J. E. Meade, *Problems of Economic Union* (Allen and Unwin, 1953), p. 77.

[12] The European Study Group for a Customs Union defined several stages of economic integration: (1) A tariff community involves the adoption of a common tariff for imports and the removal of import duties on trade between member countries; (2) a customs community comes into being when the above conditions are supplemented by uniform laws and regulations for the applications of a single tariff; (3) the customs community becomes

ject to an excise tax in BLEU but not in the Netherlands, a tax is levied at the border when exported by the Netherlands to BLEU. In cases where excise taxes have been unified, a check is made at the border on the amount traded and, according to the convention of February, 1950, the revenue from the unified excise tax is distributed between the three countries according to the location of the consumption of the product.

The Benelux countries have made some progress in unifying their excise and turnover taxes although the task has not yet been completed. In general, BLEU indirect taxes tend to be somewhat higher than those in the Netherlands, although for individual commodities such as, for example, beer, the BLEU tax is higher. When all indirect taxes have been unified, about 50 per cent of the governmental revenues of the three countries will be derived from taxes subject to common agreement. One consequence of this is the limitation of independence of these countries in the use of fiscal policy for combating inflation or deflation.

The problem of indirect taxation was one of the first issues to confront the ECSC and a conflict between the German position of taxation at the point of origin (with no rebates to exporters or compensatory taxation of imports) and the French position of taxation at destination actually delayed the opening up of the common market for steel. The French position was adopted by the High Authority but the decision clearly compromised the common market principle of no "imports" and "exports" and no discriminatory practices.[13] A French spokesman pointed out that not only was there a precedent for the High Authority's decision in the practice of the Benelux customs union, but also in the handling of state and local sales taxes in the United States.[14] It may be noted that the system of exporter rebates on excise and turnover taxes and compensatory taxes on imports was adopted in the Treaty establishing the EEC (Articles 96-99). However, the Treaty also makes provision for the eventual harmonization of indirect taxes imposed by the members.

Similar problems have arisen in the ECSC with respect to legislation relating to wages, conditions of employment, and social benefits which affect costs of production. The French have tended to favor the har-

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a customs union when excise duties and turnover taxes are unified so that taxes need not be levied at the border; and (4) a full economic union requires in addition to the foregoing: the removal of all obstacles to the free movement of people, goods and capital; the coordination of domestic, economic, and social policies, and the conduct of economic relations with third countries as a single entity. (See Meade, *Negotiations for Benelux: An Annotated Chronicle, 1943-1956*, pp. 6-7.)

[13] See Horst Mendershausen, "First Test of the Schumann Plan," *Rev. of Econ. and Statis.*, Nov., 1953, pp. 269-288.

[14] Mendershausen, *op. cit.*, p. 280.

monization of social legislation in the direction of equalizing money wages, including social security and other fringe benefits. Article 3(e) of the Treaty for the ECSC lays down the principle that conditions of labor should be improved so as to permit their "equalization in an upward direction." Much the same vague principle is stated in the EEC Treaty along with a specific provision that each member state will ensure the application of the principle of equal pay for equal work as between male and female workers (Articles 117-120).

Discrimination and Conditions of Competition

National market structures are determined by a complex of governmental policies and private business practices, many of which involve some form of discrimination against foreign sellers or buyers. It has long been recognized that a truly common market requires the creation of a governmental and institutional framework which will avoid discrimination on the basis of residence. An important source of discrimination which is of special concern to the Coal and Steel Community is in the structure of transportation rates.

Some 20 to 25 per cent of the price of steel within the ECSC is represented by transportation costs, including the costs of transporting the raw materials. Thus the elimination of distortions in the structure of freight rates on coal, iron, and steel within the Community has been an important aspect of the common market. These distortions have taken several forms: (1) the charging of higher rates on foreign goods than on domestic goods; (2) the practice of "loading-breaking" which involves the treating of the frontier as the terminal point and of a second starting point for international shipments and thereby preventing the shipper from realizing the advantage of the regression in the rates as the distance increases; and (3) the variation in the general level and structure of rates between members of the Community.[15] The High Authority has been successful in eliminating the first two types of distortion and in establishing "through" rates for iron ore, coal, and steel shipped across borders, with a substantial reduction in cost. The High Authority has no jurisdiction over the general level and structure of rates but the Council of Ministers in January, 1955, agreed to the harmonization of rates for the common market commodities.

Both the ECSC Treaty and the Treaty for the proposed EEC lay down definite rules for the elimination of discrimination arising from transportation. However, the High Authority of the ECSC has discovered that its function in this area cannot be limited to the adminis-

[15] F. R. Root, *The European Coal and Steel Community* (Bureau of Business and Economic Research, University of Maryland, 1955), Part I, pp. 4-6.

tration of a few simple rules. The complexity of national rate structures for different types of carriers makes it difficult to determine "what are legitimate differentiations, what are measures in support of particular enterprises, and what are established discriminations between the industries of the Common Market."[16]

Another source of discrimination is to be found in the actions of cartels in controlling prices, production, and marketing. A different cartel policy for each member of a customs union would not be compatible with a common market. This is recognized in both the Treaty establishing the ECSC and the Treaty for the EEC. Article 65 of the ECSC prohibits agreements to fix prices, control production, or allocate markets and sources of supply (except with the permission of the High Authority). The Treaty also gives the High Authority certain powers to control pricing practices, to approve proposed mergers or dissolve concentrations, and to enforce the provisions of Article 65. But the experience of the ECSC has shown that it is not sufficient simply to establish automatic rules in this field. The High Authority must, as stated in its *Fifth General Report* (1957), undertake the task of "policy making" (page 19). Needless to say, this is a highly controversial area in Europe today and there is no general agreement on cartel policy among the members of the Community.

The EEC Treaty (Articles 85 and 86) lays down a number of rules governing competition in the common market and provides that the Council of Ministers "shall issue any appropriate regulations or directions for the application of the principles set out in Articles 85 and 86." The experience of the High Authority in this field—which has been confined to the problems of regulating competition in only a few related industries—is not reassuring. The task of formulating policies and regulations which take into consideration the special characteristics of perhaps hundreds of industries, to say nothing of their administration, seems almost overwhelming.

Experience in dealing with discrimination and competitive practices indicates a need for an administrative and quasi-judicial authority with supranational powers over a rather broad area. The role of the EEC Commission and its relation to the laws and regulations of the member governments in this area are not clearly determined by the EEC Treaty.[17] It may be noted, however, that the powers of the EEC Commission are relatively weak as compared with those of the High Authority of the ECSC.

[16] *Fifth General Report*, European Coal and Steel Community, April, 1957, p. 23.

[17] For a discussion of this question, see P. A. Blaisse, "The Common Market," *Amsterdamsche Bank Quar. Rev.*, No. 117, 1957.

The Impact on Trade and Welfare

Statistical measures of performance present serious difficulties in dealing with trading arrangements because of the wide variety of factors determining the course of trade, production, productivity, and prices. There are even greater difficulties in relating changes in the volume and pattern of trade to economic welfare since the increase in intraregional trade may not represent increased specialization but simply a shift from lower cost sources outside of the common market to higher cost sources within.

In the case of the ECSC there is considerable evidence that the common market has fostered an expansion of intra-Community trade since trade in Community products increased by a substantially larger percentage than did trade in all other goods or in other capital goods between 1952 and 1955.[18] Trade among members of the Community in iron and steel increased 170 per cent between 1952 and 1955, while at the same time intra-Community trade in other goods rose about 42 per cent and intratrade in capital goods, excluding iron and steel products, rose by 59 per cent. Intra-Community trade also rose substantially more than production. Total free world trade in iron and steel products increased 31 per cent from 1952 to 1955. Over the same period, Community trade with outside countries increased 91 per cent in imports and 17 per cent in exports of all iron and steel products. There is considerable evidence from these statistics and from the pattern of trade within the Community that much of the increase in trade across national boundaries within the Community was the result of a more economical distribution of the products within the Community rather than a diversion of trade from the outside. Much of this improvement was probably due to the elimination of discriminatory transportation rates as well as to the elimination of tariffs.

Although Benelux has been in operation longer than the ECSC, many quantitative restrictions were not removed until 1952. Several studies have sought to show the effects of Benelux on trade between the Netherlands and BLEU and its relationship to trade with third countries.[19] For both the Netherlands and BLEU, there has been a substantial increase in intra-Benelux trade since prewar, relative to the trade of these countries with the rest of the world. (For the two countries combined, the relative increase in trade with one another between 1938 and 1952 was about 50 per cent and between 1938 and 1955 about

[18] ECSC *Bulletin*, June, 1957, p. 8.

[19] For an excellent contribution to this problem as well as a review of other studies, see M. M. Kristein, "The Effect of Benelux on Belgian-Dutch Trade," *Economisch-Statistische Berichten* (Netherlands Econ. Inst.), July, 1956, pp. 657-660.

60 per cent.) A breakdown of the expansion of exports and imports by major categories also indicates an increase in the degree of specialization. The difficulty arises when we come to consider the extent to which the increase in intra-Benelux trade has been at the expense of outside countries. One approach makes the assumption that the rest of the world has not been hurt if the increase in the total trade of each country with the rest of the world has increased by a larger percentage than the increase in their total income, so that the relative increase in intratrade represents trade created by the common market. In the case of the Netherlands the ratio of imports from third countries to the national product rose from 25 per cent in 1938 to 43 per cent in 1955, and in the case of BLEU, the ratio of imports from third countries to the national product was about 30 per cent for 1938 and 32 per cent for 1955. This might be interpreted to mean that in the case of the Netherlands the increase in her share of imports from BLEU was clearly not at the expense of the rest of the world, while in the case of BLEU, the increased share of imports from the Netherlands was more likely to have been at the expense of the rest of the world. However, owing to the shifts in the structure of demand and supply between the two periods, little significance can be attached to these relationships.

Dr. Kristein, using a commodity-by-commodity approach to the problem, finds that for seven commodities, accounting for about half of current Dutch imports from BLEU, a substantial proportion of the increase in intratrade may be attributed to the formation of Benelux. From this he concludes that for most commodities the increase in Dutch imports from BLEU has been at the expense of other countries exporting to the Netherlands. However, this does not necessarily mean that on balance there has been a diversion of Dutch trade from the rest of the world, after taking into account all of the indirect effects on the Netherlands' trade.

Conclusions

In concluding this discussion, perhaps the fundamental lesson of the Benelux and ECSC experience for the EEC is that the creation of regional free markets involves far more than the negative action of removing barriers to trade at the borders. National markets operate within a social and political framework peculiar to each country and efforts to merge them require not simply a tearing down of external walls but a considerable amount of remodeling according to a common architectural design, or at least a set of compatible designs. Moreover, the more the national economic frameworks are cluttered up with governmental controls over production and trade, the more difficult the job

of creating a common market structure. For example, in the Benelux experience the least successful aspect of the free-trade program lies in the field of agriculture which, as in most countries, is subject to various types of price and production controls.

Closely related is the conclusion that a common market cannot be created or maintained in the absence of internal and external equilibrium on the part of each of its members. The idea that over-all disequilibrium of one or more members can somehow be made compatible with free trade within the group by a common commercial policy with third countries is spurious. It is for this reason that I reject the view that a European common market is likely to result in a free trading bloc maintained by high tariffs and other restrictions against the rest of the world. On the contrary, I believe that a European common market will either force a further general liberalization of European trade and exchange policies vis-à-vis the rest of the world or it will fall flat on its face.

Another conclusion is that the principle of harmonization of economic and social legislation among the European countries contemplating the promotion of a customs union has been overemphasized. Except for agriculture, Benelux has been quite successful in creating a common market in the face of fairly substantial differences in economic and social policies. If employers and workers in each member country are led to believe that they are unfairly treated unless they are subject to conditions as good or better than their foreign competitors, the EEC is certainly in for a stormy time.

On the other hand, the formulation and administration of policies in the field of transportation rates and competitive business practices would seem to require something more than harmonization of national policies; specifically, the creation of supranational authorities with broad powers along the lines of the High Authority of the ECSC. This may also be a prerequisite for the creation of a common market in agricultural products within the framework of a system of price and production controls.

Both the ECSC and the Benelux customs union (since 1952) have operated in an environment of rapidly expanding production and trade and, until recently, in a period characterized by an increasing degree of internal and external stability. The adjustments occasioned by the freeing of markets attributable to these institutions were minor compared with those arising from other factors affecting Western European economies. While the tariff reductions envisaged by the EEC are on a much broader scale, the adjustments required over the next twelve to fifteen years are likely to be eclipsed by those which must inevitably

accompany economic growth in a dynamic world economy. The major benefits from the liberalization of trade will come through the influence of market forces on investment decisions, which in turn will determine the relative rates of growth in various industries supplying the common market. Adjustments involving severe hardship on important industries are not likely to be tolerated. Finally, the success of the European Community will depend ultimately upon the existence of a favorable world economic environment and the willingness of member states to adopt policies consistent with over-all equilibrium.

EUROPEAN POLICIES ON RESTRICTIVE BUSINESS PRACTICES

By Roger C. Dixon
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Comparatively few people in this country are aware of the significant change in European thinking on the encouragement of competitive enterprise which has developed since the war. Gathering momentum very slowly in the early days of postwar reconstruction, it has now, in most countries of Western Europe, pervaded to a varying degree all sectors of the economy, both public and private, and it is reflected in major shifts in governmental policies toward restrictive business practices.

In its basic essentials this change in thinking is simply a recognition that fundamental economic objectives are in general best realized by the free play of the forces of competition in the market place. However, the complex of reasons back of the change are far from simple or easy to analyze, and its manifestations are varied. The latter include progressive adoption of reasonably effective anticartel legislation, a widening interest in measures to increase the productivity of industry, and the modernization of management techniques and philosophy.

The Prewar Approach

It is clear that this situation stands out in sharp contrast to the European climate before the war.[1] In the twenties, when the cartel movement became firmly entrenched, the problem was either ignored as a matter of public policy or governmental actions of varying sorts were taken to encourage cartel arrangements. It was in this period that the United Kingdom abandoned its free-trade policy, with one effect being substantially increased private restrictions on production and trade sheltered behind the new protective tariff umbrella. In those few countries, such as Germany, in which tentative legislative steps were taken toward control of restrictive business arrangements, they were largely emasculated by court interpretation or otherwise.

The cartel movement, of course, attained its maximum strength dur-

[1] For a history of the development of anticartel legislation in Europe, see Temporary National Economic Committee, Monograph No. 40, "Regulation of Economic Activities in Foreign Countries" (76th Cong., 3rd Sess., Washington, 1941), and "Foreign Legislation Concerning Monopoly and Cartel Practices," *Report of the Department of State to the Subcommittee on Monopoly of the Senate Select Committee on Small Business* (82nd Cong., 2nd Sess., Washington, 1952).

ing the Great Depression. The majority of governments dropped their laissez faire attitude toward business combinations and turned to policies of positive encouragement of cartel arrangements. This was done in the belief that self-regulation of private enterprise in the form of production limitations and price floors would help to stabilize the economy and fend off the most extreme effects of the depression period. In some countries, notably Germany and Italy, forthright compulsory cartelization statutes were adopted. In those days, we ourselves, as allegedly the chief exponents of free competitive enterprise, were presenting no convincing example to the rest of the world for a different course of action.

During the war period, an even greater entrenchment of the cartel system took place. The Nazi concepts of autarchy as applied to industry and trade were now extended to most of the areas occupied by German forces. In many instances, existing trade associations and other cartel mechanisms were given broad powers for administering basic wartime governmental programs with respect to the allocation of raw materials and intermediate products essential to war production, contributing further to the over-all strength and basic grip on the economy of these cartel organizations.

Factors Motivating Recent Changes in Policy

At the risk of great oversimplification, an attempt will now be made to summarize some of the principal factors bringing about the change in governmental policies and thinking since the war. At the start of the postwar reconstruction, little attention was directed within Europe to the cartel problem other than in occupied Germany. With the basic need being the restoration of industrial production and with goods in short supply, there was little incentive for the revival of cartel mechanisms. But as production spurted ahead and trade returned to a comparative degree of normalcy, the old habits of restrictionism began again to take hold. Agreements to place limitations on each firm's production or to dictate the prices at which an industry's production should be sold began to appear in increasing quantities. Most agreements of this nature were designed to preserve the *status quo* of the industry and the relative position of the firms within it, and, on the price side, were based upon the costs of the least efficient producers.[2]

It soon became apparent that the degree of economic recovery de-

[2] The extent and variety of these arrangements is amply revealed in official government documentation. See, for example, the reports of the U.K. Monopolies and Restrictive Practices Commission, particularly *Collective Discrimination: A Report on Exclusive Dealing, Collective Boycotts, Aggregated Rebates and Other Discriminatory Trade Practices* (London, June 1955); also French National Assembly, M. Poimboeuf, Deputy, Economic Affairs Committee, Report No. 12335 on Bill No. 9951 Relating to the Control of Cartels (Paris, 1951).

sired would be difficult to attain if this type of activity were allowed to continue completely unchecked. Further than this, the resultant high cost of European products in world markets and the relative lack of adaptability to shifts in market demand brought about by the inflexibilities of the cartel system threatened seriously to impede Europe's ability to overcome its chronic balance-of-payments problems. A report by the Committee for Economic Development pointed up this problem specifically as to the United Kingdom as follows:

> It is difficult to see how any great increase in the adaptability of British industry and in its competitive strength abroad is to be achieved until public policy effectively resists private arrangements which impede industrial adaptation and technological advance.[3]

Subsequently, the continued Communist pressure against Western Europe made it apparent that any artificial blocks of this sort to production essential to mutual defense must be removed, and that cartel barriers and psychology must not be allowed to stand in the way of the increased productivity necessary to a rising living standard in the area.

Finally, as most Western European economies have advanced to new high levels in the past several years, the threat of inflation resulting from booming economies and conditions of full employment has caused many governments to strengthen their anticartel policies as one means of placing downward pressure on costs and prices.

One or more of these factors, or a complex of them, have motivated most countries in free Europe to adopt reasonably effective anticartel legislation or to give active consideration to its adoption. The list of those which have laws on the subject is impressive indeed. It includes Austria, Denmark, the Federal Republic of Germany, Finland, France, Ireland, the Netherlands, Norway, Sweden, and the United Kingdom.[4] Perhaps the outstanding examples are the United Kingdom and Germany, both of which have recently adopted new laws. The British legislation[5] should approach in effectiveness our own and the Canadian in eliminating arbitrary and unjustified restrictions on trade within the country. The new German law,[6] which replaces the decartelization statutes imposed under the occupation, becomes effective at the beginning of 1958. It is the culmination of a difficult battle by Ludwig

[3] "Britain's Economic Problem and Its Meaning for America," a Statement on National Policy by the Research and Policy Committee of the Committee for Economic Development (March, 1953), p. 44.

[4] The texts of laws adopted through 1954 may be found in the following publications issued by the United Nations: UN Economic and Social Council, Official Records of the Sixteenth Session, Supplement No. 11B, Restrictive Business Practices, Annex C, "Texts of National Legislation and Other Governmental Measures Relating to Restrictive Business Practices" (New York, March, 1953), and Official Records of the Nineteenth Session, Supplement No. 3, Restrictive Business Practices, "Report on Current Legal Developments in the Field of Restrictive Business Practices" (New York, December, 1954).

[5] Restrictive Trade Practices Act, 1956.

[6] German Cartel Law, 1957.

Erhard, the Economics Minister, who has long insisted that a principal reason for Germany's remarkable economic progress in recent years has been her free market economy unaccompanied by crippling cartel restraints.

National Anticartel Policies

Turning now to an analysis of the structure of European laws, certain definite patterns emerge. The prevailing doctrine in Western Europe which has developed over the years and underlies the bulk of the legislation is commonly known as the "abuse principle." Under this approach, cartel and monopolistic restraints on production and trade are not condemned as such nor are they necessarily considered as undesirable phenomena. In the purest form of this doctrine, such restraints are permitted, or in some cases even encouraged, when they are deemed to accomplish ends which are consistent with the economic aims of public policy, and abuses of the economic power of cartels or monopolies are curbed when they prove to be against the public interest. In short, there is no presumption as to the merits or demerits of particular restrictive arrangements. A public policy determination is made in each case on the basis of all the attendant circumstances. The early laws in Germany, the Netherlands, Norway, and Denmark,[7] adopted between the wars, fell in this category.

The most illuminating illustration of the application of the abuse principle is to be found in the approach taken by the Netherlands. In a series of enactments from 1935 to 1956,[8] the abuse principle in its pure form has been consistently applied. The 1956 law, for example, empowers the Minister of Economic Affairs to declare cartel agreements binding on all firms in an industry if he deems it in the public interest to do so, only provided that the number of firms already members of the arrangement is a substantial portion of the whole industry. On the other hand, restrictive agreements can also be declared partially or entirely unenforceable and certain positive courses of action may be imposed upon the participants in the arrangements.

As described in an article by an officer of the Ministry of Economic Affairs:

> The legislation has developed in accordance with accumulated experience, but without altering the original approach. This fundamental approach has, from first to last, been one of strict neutrality towards the phenomena of economic grouping and economic power.[9]

A glance at the actions taken under these statutes, however, raises interesting doubts whether Dutch policy is as far removed from our

[7] German Cartel Decree of 1923, Dutch Entrepreneurs' Agreements Law of 1935, Norwegian Trust Control Act of 1926, Danish Law Regarding the Reporting and Registration of Price Agreements of 1937.

[8] The current legislation is the Economic Competition Act of 1956.

[9] J. F. H. Wijsen, "Cartel Legislation in the Netherlands," *Cartel*, October, 1956, p. 110.

own as this description would seem to indicate. During the depression period in the thirties, it was the policy of the Dutch government to prevent so-called "cutthroat" competition and resultant large-scale business failure which it was felt would have a disastrous effect on the economy. Nevertheless, in this period the compulsory cartelization powers were used most sparingly—apparently in only eight cases. On the other hand, since the war during the period of rising industrial and general economic activity, there have been relatively numerous proceedings against cartel abuses. By 1956, there had been forty-six such proceedings, with resulting abolition or adjustment of the arrangements in thirty-three cases. Since that time, the rising threat of inflation has caused a substantial increase in the government's activity, especially with regard to price cartels.

In a particularly significant case, from the standpoint of the interests involved, the government suspended all cartel activity among manufacturers, wholesalers, and retailers of radios, resulting in a general price drop of around 25 per cent. Similar action in the phonograph record field resulted in a like decline in price. Actions were also taken in the brick, newsprint, vegetable oil, and bicycle industries.

Certain standards which the Dutch government has employed in judging the consistency of cartel arrangements with the national interest are also highly significant in judging the true economic impact of the abuse-type of legislation. The writer quoted above points out, for example, that cartels among suppliers and buyers involving exclusive dealing arrangements are never approved if their purpose is to exclude particular firms or classes of enterprise, and an arrangement has never been accepted which permits an industry to bar new entrants on the basis that an optimum number of firms already exists. Further, no minimum price agreement is acceptable which sets the level of prices higher than the costs of the most efficient firms.

As noted above, a majority of the European national laws are based upon the abuse principle. However, a contrasting doctrine known as the "prohibition principle," which has for some years been advocated by German experts on cartel problems, has also played an important role in recent European developments. This approach, instead of merely controlling the abuses which arise from concentrations of economic power, would prohibit outright any agreements which interfere with the free play of competitive forces.

The new German statute takes this principle as its point of departure. Its first article renders invalid all agreements among enterprises which, by restraining competition, are likely to influence the production of, or the market conditions with respect to trade in, goods or commercial

services. The Cartel Authority established by the act is empowered to move against those who willfully disregard this invalidity.[10]

Despite this provision, enforcement of the German statute may produce results not very different from those to be expected under a statute limited to the control of abuses of economic power. It is apparent that a broad prohibition of this nature would need to incorporate certain exceptions to be workable.The exceptions in the German law are, however, of considerable breadth. The most important involve cartels formed to counteract a structural crisis caused, for example, by a permanent shift in demand,[11] rationalization agreements,[12] and cartels found to be necessitated by the general economic situation and the public interest—presumably in the presence of a general cyclical crisis.[13] Since the application of most of these exemptions depends on administrative action in given cases, the outcome should depend on the vigor of enforcement and the nature of court interpretation.

The new British legislation differs from other European laws in that it does not fall clearly into either the abuse or the prohibition pattern. With the exception of a per se outlawing of collective resale price maintenance agreements,[14] it is based on the principle of judging each agreement according to its consistency with the public interest. However, its key provision places on the participants the burden of proving that agreements are not contrary to the public interest.[15] Compulsory registration together with a special prosecutor and court provides the mechanism for this review.

A brief word should also be said concerning two devices which are fairly common to European legislation. The first is the requirement for registration of restrictive agreements. Originating with the Norwegian Act of 1926, it is now employed in all of the Scandinavian countries, in Austria, the Netherlands, in the United Kingdom, as we have seen, and in certain instances in the German law. This device if loosely used can merely result by default in official sanction of restrictive arrangements. In most cases, however, it is an important element in the enforcement of abuse-type statutes. Without the essential information on particular restrictions provided by compulsory registration, it would

[10] Article 38.
[11] Article 4.
[12] Article 5.
[13] Article 8.
[14] Section 24.
[15] The Act specifies that a restriction shall be deemed to be contrary to the public interest unless the parties to the restriction are able to satisfy the court that one or more of a group of circumstances which are specifically listed are met, and the court is further satisfied "that the restriction is not unreasonable having regard to the balance between those circumstances and any detriment to the public or to persons not parties to the agreement . . . resulting or likely to result from the operation of the restriction." (Section 21.)

be very difficult to enforce statutes in which there are no prohibitory clauses or inherent presumptions as to illegality.

The other device is the shedding of the harsh light of publicity on restrictive arrangements on the theory that public opinion will force corrective action on the part of the participants. While there are obvious limitations to the usefulness of this course of action if total reliance is placed upon it, it can play a major role when combined with enforcement procedures in bringing about voluntary or negotiated adjustments.

Regional Arrangements and Anticartel Policy

So much for the national legislation. By far the most exciting developments are now taking place on the international, or indeed the supranational, plane. The drive for Western European integration has produced results in the antitrust field which a decade ago would have been inconceivable. The elimination of private interferences with the flow of trade across national boundaries has become an integral part of the creation of a vast common market. The elimination of discriminatory practices by enterprises acting individually or in association is but one aspect of the removal of all national discriminations. The rules of competition which have been included in the treaties for the European Coal and Steel and Economic Communities attest to the general realization that to eliminate governmental trade barriers and discriminations and leave commercial enterprises free to replace them with their own version of these devices would frustrate the very purposes for which the mechanisms have been created.

The powers of the Coal and Steel Community to deal with restrictive practices of the enterprises subject to its jurisdiction far transcend in breadth and strength any other regulations in the European area. The Treaty forbids outright all agreements and practices tending to prevent or distort competition, including fixing of prices, controlling of production, or allocation of markets or sources of supply, and it prohibits all mergers which would significantly reduce competition in the Community market.[16]

The High Authority, the executive organ of the Community, has broad powers to enforce these provisions, within national boundaries as well as across them. It has so far used these powers sparingly, with emphasis to date on reorganization of coal selling agencies and the revamping of their practices. Nevertheless, a glance at the history of the prewar European steel cartel and its restrictionist pattern[17] gives

[16] Treaty Establishing the European Coal and Steel Community (1951), Articles 65 and 66.
[17] See Ervin Hexner, *The International Steel Cartel* (University of North Carolina Press, 1943).

adequate showing of how far Europe has progressed toward the ideal goal of a free and open competitive market for these basic products.

The Common Market Treaty has an even greater potentiality in the area of business practices for the creation of a truly competitive European economy. It is highly significant as the first international treaty attempting to regulate restrictive practices affecting all sectors of international trade among its members. For several reasons, judgment cannot be rendered at this stage as to whether this potentiality will be fully realized. First, the Treaty prohibits outright agreements between enterprises which are likely to affect trade between member states and "which have as their object or result the prevention, restriction or distortion of competition within the Common Market. . . ." However, the Commission established to administer the Treaty's provisions is empowered to declare this prohibition inapplicable to agreements which are found to improve production or distribution or promote "technical or economic progress" and do not enable the participants to eliminate competition with respect to a substantial portion of the goods concerned.[18] Second, much of the detail as to how these provisions are to be enforced has been left to be spelled out during the first few years of the existence of the Community, including the important question of the relation between national laws and the Treaty's provisions.[19] The ultimate degree of success would appear to depend both on the decisions taken in this last regard and on the degree of vigor of the central administrative agency.

Mention should also be made of the projected Free Trade Area in relation to the business practices field. The realization of the negotiators that freedom of entrepreneurs to restrict trade would frustrate the purposes of the plan points to the likelihood that control features will be included in the ultimate treaty.[20]

Significance of Present Trends

How much significance should be attached to these recent moves in Europe to control undesirable business practices? Do they mean merely that a few of the worst rigidities of this sort will be removed from the European scene? Or do they constitute concrete steps toward a truly competitive economy, with the attendant advantages of steadily rising productivity and standards of living? It is not yet possible to provide definitive answers to these questions, but some significant indications and considerations can be identified.

First, on the negative side, habit patterns and ingrained ideas do

[18] Treaty Establishing the European Economic Community (1957), Article 85.
[19] Article 87.
[20] See Organization for European Economic Co-operation, "Report on the Possibility of Creating a Free Trade Area in Europe" (Paris, 1957), p. 16.

not change overnight. Many Europeans in all walks of life, but especially in the management of large industry and its associations, remain convinced that the static security of the cartel system is preferable to the risks of free and open competition. Whether a broader base of support from industry for governmental policies and actions will develop with the passage of time remains to be seen. Also on the negative side, it must be remembered that the developments which have been described have taken place in a period of generally rising prosperity. Should there be a major business recession accompanied by unemployment, the picture could change substantially.

A number of important factors emerge on the positive side of the ledger. First, while the concepts which underlie most European statutes are quite different from those which motivated the United States antitrust laws, the differences between the laws become narrower when the results of their enforcement are examined. Determination under the European statutes as to what is in the public interest dictates more often than not the removal of the types of restraints proscribed by the Sherman Act. There are few per se rules in European laws, even in the area of price agreements, but they are generally aimed at agreements which serve to maintain prices at a significantly higher level than would otherwise prevail. Collective actions to discriminate, boycott, or allocate customers are central targets of these laws.

Second, most national anticartel policies have relatively broad political support and are not therefore dependent on the continuance in power of the original advocates. This is true, for example, in Great Britain where both major parties have consistently supported progressively stronger legislation and in Germany where the opposition socialist party has advocated strong anticartel measures.

Third, there is a substantial understanding on the part of government officials of the problems associated with the cartel system and a strong determination to see that the tools which have been placed in their hands are used effectively. To give but one brief illustration, in introducing the new British Act in the Parliament, Mr. Thorneycroft stated that:

> . . . whatever benefits may flow from restrictive arrangements, whatever stability may be secured by them, a price has to be paid for them, and it is a price which, in an age of rapid technical change, we can ill afford to pay.[21]

To turn to a fourth factor on the positive side, there are unmistakable signs of a transformation in management attitudes and techniques at both the industrial and distributive levels.[22] On the distributive side,

[21] Parliamentary Debates, House of Commons (March 6, 1956), p. 1940.

[22] See Gilbert Burck, "The Transformation of European Business," *Fortune*, Nov., 1957, p. 145.

mavericks are appearing in increasing numbers. It has been possible, under the French law of 1953,[23] for a Paris merchant to adopt discount tactics and expand his business at a phenomenal rate. It has been possible for a similar German enterprise to grow in a few years from a small retail shop to a chain of seventeen stores employing 6,000 people. We have seen a leading Swiss merchant refusing to play ball with the petroleum marketing cartel and forcing down the retail price of gasoline. On the industrial side, the concept of productivity, for which there was no equivalent word in the French language a few years ago, is receiving central attention from management. Substantial changes are occurring both in techniques of production and methods of business organization which should assure in time a somewhat more dynamic and competitive approach.

Finally, the economic integration of Western Europe cannot fail to have profound effects on the policies of the area with respect to restrictive business practices. As indicated previously, it is far too early to determine the shape or direction of the results. It is conceivable, however, that there will develop over a period of time a centralized and effective control of restrictive practices with individual national activities relegated to a secondary place. This outcome could be comparable to our own system of inter- and intrastate antitrust regulation.

[23] Decree of August 9, 1953, concerning the maintenance or restoration of free competition in industry and business.

ECONOMIC AND FINANCIAL DEVELOPMENTS IN WESTERN EUROPE

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There is a danger that, in discussing developments in Western Europe, attention will be focused principally on the United Kingdom, Western Germany, and France. This is understandable, because those three countries are tremendously important in Western Europe, having 51 per cent of the population, 69 per cent of the steel output, and, in 1956, 56 per cent of combined export and import trade. But fourteen or fifteen countries comprise what is ordinarily thought of as Western Europe, and the economic and financial trends in any given year are by no means uniform in this group of countries. For example, the exchange crisis of the past summer (which will be described in some detail at a later point) centered on four currencies—the pound sterling, the deutsche mark, the French franc and the Dutch guilder—and the currencies of the other countries on the whole were unaffected.

In Western Europe as in the United States, 1956 was a year of virtually unbroken boom; in 1957 signs of adjustment began to emerge. The principal task of the monetary authorities in all of the countries of Western Europe has been to moderate the boom so as to damp off inflation and maintain or achieve a tolerably stable monetary and economic position. There have been crosscurrents, of course, notably the very severe winter of 1955-56 and the Suez crisis, both of which had adverse balance-of-payments effects. But after allowance is made for these episodes, it has to be concluded that on the domestic side the principal difficulties with which the countries of Western Europe have contended have arisen out of the conditions of economic expansion.

The economic and financial situation in 1957, against the background of 1956, can be summarized by reference to the main trends in production, money supply, wages, and prices. Production increased in 1957 in every one of the thirteen countries shown in Table 1, as compared with 1956, even though in most instances the 1956 level of production was much higher in relation to 1953 than was the case in the United States. Increases in 1957 may be particularly noted in the cases of Denmark, France, the Netherlands, and the United Kingdom—all of which have been obliged to take firm measures in the past few months to control the boom.

This strong upsurge in production was accompanied, as would be

expected, by increases in money supply in nearly all of the countries in Western Europe, as is shown in Table 2. Moreover, in almost every instance the increase in 1956 substantially exceeded the increase in the United States. However, in most instances, also, the available data for 1957 show either an actual decrease in money supply or a turn-down of the rate of increase.

TABLE 1

PRODUCTION IN WESTERN EUROPE
(1953=100)

	1956	1957
Austria	138	151 (May) 142 (August)
Belgium-Luxembourg	122	131 (May) 117 (August)
Denmark		
Manufacturing	108	120 (September)
Agriculture	103	105 (September)
Finland	130	138 (August)
France	134	156 (May) 140 (July)
Germany	138	151 (May) 138 (August)
Greece	134	146 (August)
Italy	128	146 (July)
Netherlands	124	136 (May) 126 (September)
Norway	122	136 (September)
Sweden	114	126 (May) 115 (August)
United Kingdom	112	121 (May) 118 (September)
United States	107	107 (September)

Wage trends in all of the Western European countries for which systematic data are available (see Table 3) were sharply upward in 1956 and 1957, the rate of increase in most instances exceeding that in the United States. Wholesale prices, on the whole, in most of the countries did not notably exceed the rate of increase in the United States (see Table 4). However, it has to be borne in mind that some countries, including France, endeavor to control the prices of certain items, and that this may hold down the price index. Note may be taken

TABLE 2

MONEY SUPPLY IN WESTERN EUROPE

	Index Numbers (1953=100)		Per Cent Increase		
	1955	1956	1955	1956	1957
Austria	128	133	1	4	7 (September)
Belgium-Luxembourg	106	108	4	3	
Denmark	99	101	1	2	4 (September)
Finland	124	127	13	9	−5 (July)
France	128	141	13	10	8 (August)
Germany	124	133	10	7	16 (September)
Greece	153	167	26	12	
Italy	121	129	11	7	10 (June)
Netherlands	116	112	9	−4	−3 (September)
Norway	106	110	2	3	−3 (September)
Portugal	120	126	6	6	6 (June)
Sweden	103	110	1	7	6 (September)
Switzerland	106	114	3	7	4 (September)
United Kingdom	103	104	—	1	1 (September)
United States	105	106	3	1	1 (September)

in passing of the rather sharp increase in the three years 1955-57 in Finland, France, the Netherlands, and Norway and the substantial increase in 1955-56 in the United Kingdom. All of these countries have been obliged to take measures to contain inflation.

These measures were chiefly in the fields of credit and fiscal affairs. In the first, with few exceptions the Western European countries during 1956 and 1957 took steps to increase the cost of borrowing and otherwise to restrict credit. Throughout 1956 and 1957, for example, European central banks generally increased rediscount rates. This was done by Belgium, France, the Netherlands, Sweden, and the United Kingdom; and even Switzerland increased to 2½ per cent the 1½ per

TABLE 3

WAGES IN WESTERN EUROPE
(1953=100)

	1955	1956	1957
Austria	113	119	127 (August)
Belgium	105	110	131 (April)
Denmark	109	117	121 (First Quarter)
Finland	107	119	123 (May)
France	113	126	137 (August)
Germany	112	120	126 (May)
Italy	107	113	117 (September)
Netherlands	116	120	135 (August)
Norway	111	120	133 (May)
Sweden	111	119	128 (May)
Switzerland	102	105	107 (June)
United Kingdom	111	120	128 (September)
United States	106	112	118 (September)

cent rediscount rate which had remained unchanged for over twenty years. Denmark, Italy, Portugal, and Norway did not change their rediscount rates during this period. The German Central Bank, after increasing the rediscount rate progressively from 3 per cent in 1954 to 5½ per cent in the second quarter of 1956, in the third quarter began a series of three reductions which brought the rate to 4 per cent in the third quarter of 1957.

On the fiscal side, the details vary greatly from country to country, but the broad situation is that during the past two years the Western European countries have endeavored to reduce fiscal deficits to a level which could be financed with little or no recourse to the central bank.

TABLE 4

WHOLESALE PRICES IN WESTERN EUROPE
(1953=100)

	1955	1956	1957
Austria	102	104	106 (October)
Belgium	101	104	106 (September)
Denmark	103	107	104 (September)
Finland	99	103	111 (August)
France	98	102	108 (August)
Germany	101	103	105 (September)
Italy	101	102	100 (September)
Netherlands	101	104	107 (August)
Norway	104	109	112 (October)
Portugal	95	98	100 (August)
Sweden	103	108	109 (September)
Switzerland	101	104	105 (September)
United Kingdom	103	108	106 (August)
United States	100	104	107 (October)

In Belgium, for example, expenditures were cut in both years. The Central Bank refused to increase the continuing line of credit to the Treasury beyond the established limit of 10 billion francs, and confined additional Treasury financing to a special credit of 2.5 billion francs for the four months, September-December, 1957. After very strenuous discussion between the Central Bank and the government, the Treasury took steps to repay the special credit to the Central Bank by means of new money obtained by a refunding operation in the money market. It may be mentioned in passing that the monetary authorities of Belgium announced in November a series of reforms relating to the money market designed to facilitate open-market operations in that market and to terminate the automatic link between Treasury bill financing and increases in deposits of commercial banks. The Netherlands government, faced with increasing inflationary pressures during 1956-57, took steps to reduce expenditures and increase revenues. Sweden in April, 1957, proposed new taxes to cope with

inflation. Denmark had planned to borrow 355 million kroner during the budget year 1957-58 but beginning in July took measures to reduce and if possible eliminate this borrowing, by means of forced savings, higher excise taxes, and so on. In Italy, although monetary policy during the two years was adjusted to fiscal deficits, measures were adopted to cut the deficit approximately in half from the level of earlier years, and the aim is to eliminate it completely by 1959-60.

Economic and financial developments in Western Europe are closely related to the external financial positions of these countries. All of them are in varying degrees heavily dependent on foreign trade, and only two—Western Germany and Switzerland—have gold and foreign exchange reserves large enough to make them relatively immune to balance-of-payments difficulties. The common experience of all of these countries is that surging economic development accompanied by rapid credit expansion and substantial increase in money supply and prices cannot proceed many months without being reflected in losses of reserves on a large enough scale to demand corrective measures. Another important point to bear in mind is that these countries, members of the OEEC and the EPU, have as a group been successful in substantially eliminating quantitative restrictions on trade within the area and greatly reducing such restrictions on trade with the rest of the world. Moreover, they are reluctant to reimpose quantitative restrictions as a means of dealing with balance-of-payments difficulties. There has hence been great reliance on monetary and fiscal measures to restore tolerable balance-of-payments equilibrium.

Taking Western Europe as a whole, 1956 and 1957 show a continuation of the expansion of foreign trade which had been notable since 1953. Exports of the OEEC countries amounted to 33,037 million dollars in 1955, 36,284 million in 1956, and 39,475 million (as an annual rate) in the second quarter of 1957. In the same periods imports were 38,067 million, 41,997 million, and 46,661 million dollars. Hence the trade deficits for the three periods were 5,030 million, 5,713 million, and 7,186 million dollars. This increased deficit for the second quarter of 1957, annual rate, compares with 5,908 million dollars for the corresponding quarter of 1956. There was also an increase in gold and dollar reserves in Western Europe in 1956 and 1957, as is shown in Table 5. But it is to be noted that during 1957 the movement of reserves has presented a mixed picture in contrast with the area-wide increases in the earlier years. Substantial decreases in reserves occurred in Belgium, France, Greece, the Netherlands, and the United Kingdom. The reserves of Western Germany almost doubled during the two years 1956-57, which counterbalanced all decreases in the area.

Continental EPU countries carry on more than half of their trade with each other (including their colonies) and about seven-tenths of their trade among themselves and the sterling area. The United Kingdom carries on nearly three-fourths of its trade within the sterling area and the EPU area. Within these two trading areas, currency convertibility is very nearly complete, while exchange transferability between the two areas and the dollar area is still incomplete. However, increasing transferability and reduced discrimination in the application of quantitative restrictions have made less distinct the line between the dollar and non-dollar trade of Western Europe. In recent years

TABLE 5

GOLD AND FOREIGN EXCHANGE RESERVES OF WESTERN EUROPE
(Million U.S. Dollars)

	1953	1954	1955	1956	1957
Continental EPU..	10,125	11,450	12,900	13,450	14,300 (October)*
Austria.....	320	412	361	406	510 (October)
Belgium.....	1,087	1,046	1,146	1,177	1,072 (October)
Denmark.....	167	143	133	131	146 (October)
France.....	956	1,369	2,076	1,356	600 (November)
Germany.....	1,958	2,636	3,076	4,291	5,745 (October)
Greece.....	191	199	210	218	189 (September)
Italy.....	952	1,041	1,237	1,308	1,443 (August)
Netherlands....	1,224	1,276	1,277	1,072	972 (October)
Norway.....	142	138	165	179	177 (October)
Portugal.....	616	655	671	690	681 (September)
Sweden.....	507	478	470	473	468 (October)
Switzerland.....	1,770	1,837	1,855	1,914	1,913 (October)
Turkey.....	213	205	211	230	313 (October
Finland.....	145	211	219	174	169 (October)
United Kingdom..	2,546	2,798	2,156	2,172	1,850 (September)

* Estimated.

exchange difficulties in these countries have arisen out of the balance of payments as a whole rather than out of one segment of it, although the maintenance and expansion of dollar earnings has continued to be very important. Moreover, since the exchange and quantitative restrictions which remain are directed primarily against trade with the dollar area, it is to be expected that exchange difficulties and reserve losses will arise more on the non-dollar than on the dollar side of the external transactions of Western European countries.

Developments in the EPU during 1956 and 1957 have been overshadowed by the large surpluses of Western Germany and the large deficits of France and the United Kingdom. The monthly average settlement for the twelve months ending October, 1957, was a surplus of 144 million dollars for Germany out of total surpluses of 155 million dollars; and an average deficit of 77 million dollars for France and 35

million dollars for the United Kingdom. At a later point more will be said about this situation.

In summary, Western Europe as of now presents the following aspect. Like the United States, these countries are in the process of trying to digest a tremendous industrial expansion. Both labor and capital have been in short supply during the past two years and both costs and prices have been edging upward. As a whole, the Western European countries have avoided serious difficulties, France being the outstanding exception. But several other countries, notably the United Kingdom and the Netherlands, are being hard pressed to maintain a satisfactory balance; and Germany presents the contrasting picture of a country trying to learn how to live as a major creditor—an exercise in which the United States has been engaged for the last ten years. The remainder of this paper will be devoted to a closer examination of current developments, beginning with the exchange crisis of May-September, 1957, and then turning to the United Kingdom, German, and French situations.

The exchange crisis of 1957 is particularly interesting for several reasons. It was short lived but violent; and it was highly selective in that most European countries substantially or completely escaped its impact. For example, the Netherlands guilder came under very severe pressure for a few weeks, while the Belgian franc in large part escaped pressure notwithstanding the very close relationship of the two countries. The Italian lira and Austrian schilling were almost immune from the crisis, despite the strong speculative movement of funds into deutsche marks from some other European countries.

The essence of the crisis is to be found in the growing strength of the German trade and exchange position during 1957, following close on continuing growth in the preceding year, alongside of notable weakness in three important countries; namely, the United Kingdom, France, and the Netherlands.

German export trade expanded very rapidly in the period 1955-57 from about 6 billion to nearly 8½ billion dollars, which was a rate of growth far exceeding that of the other principal trading countries in Western Europe. The results were reflected in German foreign exchange reserves which amounted to 2.6 billion dollars at the end of 1954, 3.1 billion at the end of 1955, 4.3 billion at the end of 1956, and 5.8 billion at the end of September, 1957. The increase of about 1.5 billion dollars in the first nine months of this year had a particularly strong impact on the Western European countries, since at the same time Germany was incurring a deficit with the dollar area. In the last half of 1956, Germany's monthly surplus in the EPU averaged about 100 million dollars. In the first six months of 1957 it was never less than

100 million dollars and was as high as 140 million. At the same time, although the current account of the United Kingdom was in reasonably good shape in 1956 and the first half of 1957, the heavy bear speculation arising out of the Suez crisis had caused very substantial reserve losses which had not been recovered by mid-1957. In fact, including IMF and Eximbank assistance and looking at gross reserves, U.K. reserves had increased by only some 170 million dollars in the first six months of this year. Consequently sterling was in a vulnerable position from the standpoint of speculative attack. For different reasons, the Netherlands guilder also became vulnerable during 1957. Netherlands reserves reached a peak in the first quarter of 1956 of about 1.3 billion dollars and then began decreasing. By the end of June, 1957, they amounted to about 1 billion dollars and it was evident that the inflationary surge in the Netherlands was doing damage. Although the situation was not one which needed to be regarded as in any sense out of hand, the scene was set for speculative attack on the guilder if a crisis atmosphere were to emerge. The French franc presented still another state of affairs. In 1956 and 1957 the French economy expanded very rapidly, probably more rapidly than in any country in Europe. The consequent leveling-off of exports and surge of imports, together with the impact on the balance of payments of the severe winter of 1955-56, the Suez crisis, the stepping-up of expenditures consequent on armed conflict in Algeria, and sharp reduction in receipt of U. S. aid—all combined to cause a severe drain on the foreign exchange reserves. Reserves amounted to more than 2 billion dollars at the end of 1955. At the end of 1956, they had declined to 1.6 billion dollars and by mid-1957 they amounted to about 900 million. The French franc, also, was highly vulnerable.

By the summer of 1957, the situation which has been outlined above had become familiar to any reader of the financial press in Europe, the United Kingdom, and the United States. Disparities in reserve movements month by month were widely discussed, and in numerous articles questions began to be raised about the kinds of adjustments which the writers thought would have to be made, on the assumption (which on the whole was a reasonable one) that the gains of reserves in Germany and losses in the other countries could not go on very much longer. Inevitably among the suggestions which were made was the possibility of an appreciation of the deutsche mark and/or a depreciation of other currencies, particularly the pound sterling and the French franc.

The debate became intense and complex. Various arguments were offered in support of some appreciation of the mark. For example, it was known that the German financial authorities were sternly opposed to any weakening of the defenses against inflation, and an appreciation

of the mark would be an alternative to a softening of the German internal situation as a means of damping down the strong German balance of payments. On the other hand, it was logical as a counter argument to point to the fact that Germany was incurring a large deficit with the dollar area on account of goods, services, and investment capital. In fact, during August the German government issued a strongly-worded formal declaration which emphasized this consideration as the principal reason for maintaining the exchange rate of the deutsche mark.

At the same time, the writers of the various articles pointed to weaknesses in the current positions of the United Kingdom and France and deduced from these weaknesses that a devaluation of the pound sterling and of the French franc might or would be inevitable, especially if the dollar exchange rate for the deutsche mark was to be maintained.

Whatever the merits of the various considerations in the debate, one result was inescapable. This was that all persons who had transactions to carry out in the leading European currencies and anyone who was inclined to speculate in these currencies would draw the conclusion that for the short run it was a good thing to hold marks or to make payments in marks and a bad thing to hold sterling or French francs, or, in the end, Netherlands guilders, or to make payments in those currencies. That is to say, all speculation would be in favor of the mark and against the other currencies and all the so-called "leads and lags" would be in the same direction. The result was an exchange crisis of extreme intensity during July, August, and September of 1957. The German surplus in the EPU was 180 million dollars in July, 281 million in August, and 237 million in September. In July the French deficit was 133 million dollars and the United Kingdom deficit was 51 million. On the 10th of August the French franc was partially devalued and during the remainder of the month France earned a small surplus, with the result that the French deficit in the EPU for the month dropped to 48 million dollars. But the U.K. deficit was 178 million dollars and the crisis struck the Netherlands guilder which had a deficit of 106 million dollars. In September the Netherlands took decisive internal measures and arranged credits from the IMF totaling 136 million dollars; and the storm passed over the guilder which in September actually had an EPU surplus of 22 million dollars. The deficit of the United Kingdom, however, was 173 million and of France was 30 million dollars.

By the end of September this crisis had been surmounted. The Bank of England raised the bank rate to 7 per cent in the middle of the month. At the annual meeting of the Board of Governors of the International Monetary Fund, the United Kingdom and German

spokesmen made carefully co-ordinated and very firm statements designed to remove all doubt concerning the intentions of those governments to maintain the existing exchange rates for sterling and the deutsche mark. Simultaneously, the managing director of the Fund, Mr. Per Jacobsson, emphasized in his annual statement that there was no reason arising out of the basic position of sterling to anticipate a change in the sterling rate and argued that exchange adjustment was not a reasonable expectation. During October and November there was a substantial outflow of funds from Germany. The German surplus in the EPU in October was 26 million dollars and in November, for the first time since 1954, Germany had a deficit amounting to 26 million dollars. The United Kingdom had a surplus of 25 million dollars in October and the Netherlands again had a surplus of 22 million. In November the United Kingdom incurred a very small deficit and the Netherlands surplus was 64 million dollars. In both months the French deficit ranged between 30 million and 40 million dollars. In October the United Kingdom acquired approximately 100 million dollars in operations in the exhange market, although this was more than offset by the large EPU debit carried over from September which had to be settled in the middle of the month. Only the draw-down of 250 million dollars of the Export-Import Bank loan enabled the reserves to show a small increase. In November, the reserves increased by about 90 million dollars.

Several comments may be ventured on the exchange crisis of 1957. First, the point may be made—and it should be an obvious one although it seems often to be forgotten—that important foreign exchange markets are tremendously vulnerable to pressures due to speculation and leads and lags, and that not very much is required by way of rumor concerning possible changes in exchange rates to cause big short-run swings in the volume of selling or buying. Second, it may be observed that these pressures are selective, and that they are likely to pass by currencies which are not known to be in special difficulty and to concentrate on those which are. Third, although the crisis is past and there is little or no present speculation concerning possible changes in the exchange rates of important European currencies, the longer range problems of imbalance in the Western European situation still remain to be dealt with. These are centered chiefly on the United Kingdom, Germany, and France, and the remainder of this paper will be concerned with some aspects of these three situations. But there are broader aspects which can only be mentioned. They include the trend of commodity prices and the level of world trade in the next year, the course of developments in the common market and the free trade area which is now being negotiated, the level of business activity in the

United States, the level of U. S. foreign aid of various kinds, and so on.

The United Kingdom is still engaged in the task which has occupied that country for the past decade; namely, to achieve an economy competitively strong enough and with large enough annual savings to maintain sterling as a stable and reliable currency either fully or substantially convertible into dollars. The recurring sterling crises have been a dramatic evidence of the difficulty of accomplishing this task. Currently the question is whether through tight credit restrictions, resistance to substantial wage increases, and restrictive fiscal policy the current account position of the United Kingdom can be materially strengthened.

The index of U.K. industrial prices (based on the output of all manufacturing industry) rose from 108 in 1956 to 112 in October, 1957. The cost-of-living index rose from 112 to 116 in the same period and the wage index from 120 to 128. Consumption in the first half of 1957 was 2 per cent higher than in the first half of 1956. Cost-of-living and wage movements may be compared with increases in the U. S. cost of living from 102 to 106 and in wages from 112 to 118. The corresponding German indexes moved from 105 to 107 for the cost of living while the wage index moved from 120 in 1956 to 126 in May, 1957. Output per man appears to have risen by less than wages in the first eight months of 1957. These and other indications of inflationary pressures were disturbing, particularly when matched against a relatively unsatisfactory external position. To be sure, the current account surplus of the United Kingdom for the twelve months ending June, 1957, was nearly 600 million dollars, despite the adverse effects of the Suez crisis. But, while exports in the first half of 1957 were 6 per cent in value above the level of the corresponding months of 1956, imports also increased 6 per cent. The trade deficit which in 1956 had averaged 47.6 million pounds per month amounted to 61 million pounds in the first quarter of 1957 and 53 million pounds in the second quarter.

The United Kingdom has continued to rely on fiscal and credit restraints to bring about a more acceptable international financial position and has not intensified trade restrictions despite the two exchange crises during the last twelve months. The budget for the fiscal year ended March 31, 1957, showed an over-all deficit of 331 million pounds, compared with 141 million in the preceding year. The 1957-58 budget aims at a deficit of 125 million pounds, and resort to Treasury bill finance will be minimized. On the credit side, in addition to informal restraints, the Bank of England in September increased the bank rate to 7 per cent. The government has also adopted a position of strong resistance to any substantial wage increases in the nationalized indus-

tries and clearly hopes that private employers will resist undue wage demands.

It is too early to forecast what success this major effort will have. Trade returns for July-November show that the monthly trade deficit of 52 million pounds remained at the comparatively low level attained in the second quarter. It may be repeated that the United Kingdom has shown a capacity to earn a substantial current account surplus in the last few years. At the same time, sterling is under heavy pressure on the capital side; and in particular it may be noted that holders of the still large volume of sterling balances are showing increasing eagerness to spend them—indeed, the very rapid run-down of Indian sterling during the past year has substantially added to sterling difficulties.

Germany currently presents a case of a country which has undergone a very strong financial and industrial resurgence, with a successful revival of foreign trade and a tremendous build-up of gold and foreign exchange reserves over a period of a very few years. German policy has aimed at the maintenance of monetary stability at the same time that this resurgence has taken place. The industrial wholesale price index was 101 at the end of 1955, 103 at the end of 1956 and 105 in September, 1957. The money market was tight. In July, 1956, for example, an industrial bond issue was floated at an 8 per cent rate on a twenty-year basis and call money ranged at or above 5 per cent during 1956. The Central Bank raised the rediscount twice in the first half of 1956 to 4½ and 5½ per cent. The public finances were conservative with the government cash balance reaching approximately DM7 billion in the third quarter of 1956. Hence the public finances played a contractionary role during this period.

The external financial position was increasingly strong, exports rising from 22 billion marks in 1954 to 31 billion marks in 1956 and an export surplus being maintained in all three years. The consequence was, as was earlier explained, that the gold and foreign exchange reserves increased sharply from 2.6 billion dollars at the end of 1954 to 4.3 billion at the end of 1956. Moreover, the increase continued, and the reserves reached 5.1 billion dollars in July, 5.5 billion in August, and 5.8 billion in September, 1957.

The German authorities reacted to this situation by taking a series of measures which were designed to increase imports and to encourage domestic investment. The rediscount rate was reduced to 5 per cent in the third quarter of 1956, to 4½ per cent in the first quarter of 1957, and to 4 per cent in September. Further reductions were made in tariffs and in import restrictions. The budget for 1957-58, following a major tax reduction in 1956, amounting to DM3.7 billion, was drawn

up so as to involve a total use of cash reserves and borrowing amounting to DM3.5 billion. In recent months the fiscal position has shifted from surplus to deficit and a recent forecast was made that the fiscal year 1958-59 may show a deficit of DM1.6 billion. There has been a a continued decrease in the length of the working week and increase in hourly wage rates and there is a prospect of further increases in wages.

Whether the net result of these developments will be the substantial reduction in the German surplus on international account which other countries in Western Europe are hoping for, cannot be forecast. As was indicated above, Germany actually had a deficit of about 26 million dollars in the EPU in November; but this was in large part due to a continued outflow of funds which had moved into Germany during the exchange crisis earlier this year. In the first half of 1957, German exports and imports both increased compared with 1956 but the export surplus also increased, from 342 million dollars to 467 million. However, in the same period, German trade with the United States, Canada, and the dollar countries of Latin America showed a deficit which increased from 232 million dollars in 1956 to 527 million in 1957. To repeat what was said earlier, this striking contrast between Germany's non-dollar and dollar accounts complicates the decisions which German officials have to make.

In France, a belated but strong industrial revival and the burden of expenditures in Algeria have given rise to substantial inflationary pressures which up to now have not been brought under control.

The French production index stood at 111 in 1954 and reached 156 in May, 1957. The wage index increased from 105 in 1954 to 137 in mid-1957. The cost-of-living index, which is influenced by controlled prices, began to show a disturbing upward movement following the middle of the current year. Three principal monetary factors have contributed to the current predicament confronting France. The first is substantial expansion of credit in the private sector notably in 1956; the second is rediscounting of intermediate-term paper (primarily for housing but also for industrial investment) by the Bank of France in a manner which amounts to virtual automaticity; and the third is the government budget. The last-named has been the largest of the inflationary influences. The budget deficit of around 600 billion francs in the period 1953-55 increased to 1 trillion francs in 1956 and to 1.3 trillion in the 1957 budget as first planned. The 1957 budget was later reduced by around 300 billion francs. To finance this deficit the government floated the so-called "Algerian loan" in September, 1956, which raised about 350 billion francs, in part through the appeal of a price-index link. However, the second Algerian loan, in March, 1957,

was not successful, only about 84 billion francs being subscribed. In June the government obtained a credit of 300 billion from the Bank of France, in August a second credit of 50 billion, and in November a third credit of 200 billion francs, although it seems likely that not all of this last credit will be drawn.

The current account surplus of the balance of payments of 544 million dollars in 1955 became a deficit of 833 million in 1956, and the reserves began to decline. Early in 1957 import restrictions were severely tightened, and by the middle of the year the French authorities began to take measures to reduce inflationary pressures. The rediscount rate of the Bank of France was raised from 3 per cent to 4 per cent in April and to 5 per cent in August, rediscount ceilings were reduced by 10 per cent in July and again in August, and advance deposit requirements were increased (but have since been eliminated). The main effort on the fiscal side was directed at the budget for 1958, the deficit of which was reduced from a prospective 1.4 trillion to a stated 825 billion francs.

As this article is being written, the French government is making a further effort to reduce credit and cut the budget deficit. Rediscount ceilings were reduced by another 15 per cent (amounting to about 90 billion francs) effective November 29. Some effort may be made to bring intermediate-term credit under control and the Chamber of Deputies has approved a reduction in the budget deficit to about 600 billion francs. Whether other and much-needed cuts in the level of fiscal expenditure and public and private investment will be made is not at this time known. On the external side, the exchange rate was reduced in part from 350 to 420 francs per dollar early in August and in October the reduction was completed. The rate of drain on the French reserves was substantially reduced and the EPU deficit in October and November was 37 million and 30 million dollars. However, most of the improvement in the foreign trade position has been due to a reduction in imports. The trade deficit with foreign countries (i.e., excluding overseas territories) was reduced from 52 billion francs in October, 1956, to 13 billion in October, 1957; but in the same period exports increased by only 12 billion.

Western Europe is in the midst of an intensification of integration efforts. The Common Market is ready to begin its work, and the Free Trade Area is being negotiated. There is a general belief that more thorough integration of the European economy will add to the prospects for growth, strength, and stability. It will still remain, however, for each country to follow policies designed to avoid extremes of inflation or deflation, compared with the other participating countries—and, as the preceding account shows, this is not an easy task.

DISCUSSION

RICHARD N. GARDNER: Most of the literature about the Common Market and the Free Trade Area has emphasized their effect on the flow of international trade. I would like to raise a few questions on another aspect of these plans: the impact they will have on international capital movements, particularly on American private investment in the participating countries. This subject has obvious practical importance for American business, but it raises broader economic and political questions as well.

The questions I would like to pose are these: What will be the effect on American private investment of the new plans for Western European integration? What will be the effect on the plans for Western European integration of the induced changes in American private investment? For convenience, I will refer to the Common Market project, but many of my remarks will apply also to the Free Trade Area.

In connection with the first question, we should note that United States exports to the Common Market countries are currently running at about 3 billion dollars a year. Our private direct investment in these countries totals over 1½ billion dollars with new direct investment (excluding reinvestment) taking place at an annual rate of about 250 million.

The Common Market will have two important consequences on this pattern of international trade and investment. In the first place, the gradual elimination of trade barriers among the six, coupled with the maintenance of a common tariff against the outside world, will place American exporters to the Common Market countries at an increasing disadvantage vis-à-vis their competitors within those countries. This will induce many of them to shift from exporting to the area to investing within the area, by the establishment in Europe of branches or subsidiaries or by the licensing of processes to existing European firms. Other new American investment may also be attracted by the advantages of large-scale operation in a new common market of 160 million consumers.

In the second place, there is likely to occur a significant redistribution of existing American investment within the six Common Market countries. The location of American investment within these countries is now determined to a considerable extent by the size of existing national markets. As trade barriers are gradually eliminated among the six, however, a plant within any one of the countries will be able to reach consumers in all of them on substantially the same terms as it can reach consumers in the country of its location. American enterprises may then shift to countries which have a more favorable climate for foreign investment but which have hitherto not been attractive because of the inadequate size of their markets or the unavailability of needed materials inside their national tariff walls.

To what extent such a redistribution of investment will be permitted to take place is not entirely clear. The treaty establishing the European Economic

Community, being in the nature of an international constitution, raises more questions than it answers, particularly on the subject of the movement of capital. Article 67 obliges the members of the Common Market to remove restrictions between themselves on current payments connected with the movement of capital by the end of the first four-year stage, and progressively to abolish during the whole transition period restrictions on the movement of capital "belonging to persons resident in Member States" so far as this is "necessary to the effective operation of the common market." The language of this article leaves some doubt as to just how far capital will be free to move from one member to the other and to what extent this freedom will apply to capital of resident legal entities which are controlled directly or indirectly by American interests.

Turning to the second question, it is clear that a substantial increase in the flow of American investment to the countries of the Common Market would have significant consequences for those countries. Here I will mention just three: welfare consequences, balance-of-payments consequences, and political consequences.

Discussion of the welfare consequences of the Common Market—the effect of that project on the real income of the participating countries and of the rest of the world—has usually proceeded along the lines of recent customs union analysis. In Viner's terminology, we have weighed up the "trade-creating" effects of removing barriers among the six against the "trade-diverting" effects of discriminating against the outside world.

To be of practical use, this analysis must now take into account the consequences of a substantial inflow of American investment, which might significantly reduce the trade-diverting disadvantages. To a considerable extent the six participating countries might be able to "have their cake and eat it too" as American goods presently supplied by exports gradually become available from American or European plants established within the area. In considering the welfare consequences, we should also note the competitive stimulus to European enterprise which will result from the establishment within the six countries of new firms employing American production and merchandising techniques.

Scarcely less important than the welfare consequences of an increase in American investment would be its balance-of-payments consequences. A substantial increase in the rate of new dollar investment in the Common Market countries would do much to strengthen their balance-of-payments position, particularly their dollar balance, not only directly in the form of new dollar receipts from the new investment but indirectly in the saving of dollar imports which that investment will make possible. Against this advantage, however, we have to set the long-term disadvantage of an increased burden of repatriation of current earnings from the Common Market countries to the United States.

That a substantial increase in American investment in the Common Market countries would have important political consequences is too obvious to require extended discussion. It could do much to strengthen the ties that bind the North Atlantic community. But we must be on our guard for a possible

reaction against increased American participation in the economic life of the Common Market countries similar to the reaction against American investment we are presently witnessing in Canada.

At the present time, the six Common Market countries differ considerably in their treatment of foreign investment. Some of the most significant differences are in their exchange restrictions on the repatriation of dollar earnings and capital; their taxation of individual and business income; their government regulation of business management; their control of restrictive business practices; and their general treatment of resident aliens. Surely some degree of harmonization in these different national laws and policies will have to be achieved in order to avoid the balance-of-payments difficulties and other economic problems which would result from the concentration of American investment in the one or two countries whose legislation is uncommonly favorable.

With respect to some of these matters, the Common Market Treaty does provide for common policies, as in the case of restrictive business practices. On the other subjects, however, the treaty is much less specific. With respect to the movement of capital between the participating countries and the outside world, for example, Article 70 says only that the Commission of the European Economic Community shall propose to the Council "suitable measures for the progressive co-ordination" of national policies. Moreover, the same article provides that directives on this subject may only be issued by the Council after unanimous vote. In the present economic and political climate the co-ordination of the exchange policies of the Common Market countries—of France and Germany, for example—would be no easy task. Yet such a co-ordination is a vital prerequisite to the success of the Common Market project.

The same conclusion applies to the whole range of laws and policies affecting private foreign investment. If Western European integration is to succeed, some common principles in this field must eventually be agreed upon. Assuming this is done, will these principles be restrictive or liberal? This is a key question which official and private groups in the United States should begin to consider. Its answer will do much to determine whether the projects for Western European integration have favorable or unfavorable consequences for Europe and the United States.

THEO SURÁNYI-UNGER: My critical comments will primarily refer to Professor Mikesell's inquiry into the perspectives of the European Economic Community. In particular, I shall examine and supplement his analysis relating to the effects of regional arrangements on patterns of trade. Although he is aware of the significance of a "favorable world economic environment" and of the adjustments required over the next twelve to fifteen years by the "economic growth in a dynamic world economy," his principal emphasis is on the short-term, intraregional, and static aspects of regional arrangements. Let me juxtapose a few remarks pertaining to long-term, interregional, and dynamic analysis.

The duration of regional economic arrangements displays substantial differences and obviously depends on the various institutional bases of the regions involved. Business and political considerations are seldom the bases of such arrangements for longer than a few years or decades, while geographical and cultural factors tend to be the foundation of regional economic co-operation which endures through centuries. The present-day regional bipartition of Western and Eastern Europe certainly belongs to the former rather than to the latter category. In particular, the deeply rooted cultural and evident geographical ties of Central and East-Central Europe to Western Europe have led to secular regional or quasi-regional economic conglomerations. The recent rapidly expanded trade of the seven European People's Democracies with other parts of the Soviet orbit is mostly based on political developments of the past two decades. Significantly, some of the current interregional economic relations between Western and East-Central Europe are still highly important because of their potential future growth into intraregional relations. The dynamic aspects are obvious. In a short-run or medium-period static analysis, it may be legitimate to regard the Stettin-Trieste line as a constant and the areas of the Western and Eastern European economic regions as given magnitudes. However, a truly dynamic analysis of long-term developments cannot ignore the alternative of changing these magnitudes from constants into variables with regard to the secular flow of time, allowing for possible shifts of the present regional border line, and examining the resulting "area effect."

Such an alternative analysis ought to focus attention on the related effects of Western European economic integration on the future standing of the European People's Democracies and Yugoslavia in the controversial relation between private enterprise and collectively planned economic systems. There are positive and negative effects of this kind on fostering Western and East-Central European economic co-operation.

The positive effects are functions of the classical assumption that an expanding intraregional trade of the Common Market and of the Free Trade Area in Western Europe will result in a more efficient specialization, a more productive division of labor, economies of scale, a faster growth of productivity, and higher standards of living in the member countries. Other things being equal, trade with such countries can be proportionally more beneficial to East-Central Europe. In particular, it could take advantage of a higher development of Western European transportation, communication, and trade facilities. East-Central European countries might even take advantage of the profitable opportunity of more closely co-operating, individually or as a group, with the going concern of a large-scale customs union, supplemented by an elaborate co-ordination of regional investment, employment, wage, social security, credit, and fiscal policies.

With respect to negative effects, the recent analytical findings of J. Viner (1950), J. E. Meade (1955), and others concerning relations between the intraregional trade of customs unions and any concurrent diversion of trade from the outside are meaningful. So are the postwar inquiries of H. S. Ellis,

W. Diebold, Jr., R. G. Hawtrey, J. Tinbergen, and others into the related elasticities of demand and supply, the application of the utilitarian calculus, etc. Generally speaking, discriminatory favors granted in international trade and in other economic relations with foreign countries tend to facilitate a smoother working of the pertinent mechanism of comparative costs and terms of trade at the expense of similar mechanisms relating to the rest of the world. This refers not only to discriminatory favors granted within customs unions but also to manifold supplementary measures of intraregional economic cooperation. In particular, the concomitant trade-diverting effects on the rest of the world are likely to be fostered by any political animosity resulting in interregional tension and the danger of retaliatory measures.

The current interregional relations between Western and East-Central Europe are an obvious case in point. International tensions, rooted in the difference of economic and political systems, have been evident during the recent cold war. So have been the imminent dangers of Soviet retaliation to any American-sponsored Western European economic integration. One of the retaliatory devices involved has been a vigorous revival of the Committee of European Mutual Aid. It has been aimed at a regional and Soviet-orbit economic integration of the European People's Democracies, inevitably entailing an additional diversion of trade from such outside countries as those of Western Europe. The resulting scissors effect menaces to squeeze even the small volume of current trade between Western and East-Central Europe and to cut off the life blood of any economic *rapprochement* between these two regions.

Are such negative effects likely to outweigh the positive effects? Undoubtedly, the latter may be increased by an additional "structure effect" which is often overlooked. The structural differences between private enterprise and collectively planned economic systems frequently lead to comparative international or interregional advantages with regard to costs of production and terms of trade. These specific advantages may pertain to the differences between entrepreneurial and collectively planned managerial skill or organization as a factor of production, between "market" and "planned" prices, etc. Their trade-creating and trade-promoting effects may be somewhat similar to those rooted in such other factors as nature, capital, or labor. Such a similarity may also refer to the Heckscher-Ohlin theorem of growth and decline to which comparative advantages are subject. Nevertheless, the specific advantages concerned can stimulate international or interregional trade only if and when the over-all political atmosphere is sufficiently friendly. This condition is not satisfied by the current relations between Western and East-Central Europe.

So far, no workable statistical measurement of the positive and negative effects involved has been available. Among other things, their development has been too short. Overlapping effects of short and long waves of economic expansion and contraction, ups and downs in the vigor and volume of governmental economic planning and in the temperature of the cold war, etc., have been too complex. For example, so far not even those statistical computations

of the ECE, OEEC, ECSC, etc., could be regarded as a convincing verification which indicate that most of the recent ratios of trade volumes to national incomes have increased in Western European intraregional relations but diminished concerning the interregional trade between Western and East-Central Europe.

In this context, it seems to be appropriate to limit the gist of my conclusions to three recommendations for further research. First, it would be useful if analysts of any regional economic integration of Western Europe paid increasing attention to the long-term dynamic effects of trade diversion from the the outside and to the related area and structure effects. Second, the "rest of the world" should be broken down into a specific sequence of economic regions. This sequence should concern their fundamental secular significance for, and the probability of their nearby participation in, a larger European economic community. Third, East-Central Europe should be given, in such a sequence, a high priority with respect to a probable next step leading the Benelux, Common Market and Free Trade Area populations of 20, 160, and 240 million, respectively, towards an economic integration of 340 or 360 million Europeans. A consistently applied probability calculus of this kind could substantially improve the reality and relevance of long-term growth-and-fluctuations models of European regional trade and payments.

RAYMOND VERNON: Up to three or four years ago, any discussion of Western Europe's economy would inevitably have been centered primarily on the problems of its physical recovery and on the limits of further growth. Today's papers, you will observe, have a very different emphasis. They reflect the fact that most of us now take it pretty much for granted that Europe still has great growth potentalities if only it can maintain an institutional structure which will stimulate that growth.

Of the various institutional features likely to have a long-range impact on Europe's growth, the nascent Common Market of Europe's Six and the prospective free-trade area of the OEEC nations stand well toward the top of the list. To begin with, one may ask whether the new-found appreciation of the private competitive process in Western Europe, which the Dixon paper documents so well, is likely to be helped or hindered by the advent of the Common Market. Here, one sees two conflicting forces being launched. On the one hand, it seems reasonable to anticipate that some of the domestic cartels which are still rampant within the economies of each of the Six are likely to try to offset the increased competition which the Common Market could produce; in effect, they will attempt to reach restrictive agreements with one another which will substitute for the displaced tariffs and quantitative restrictions formerly maintained by their governments.

It is not easy to forget the farcical project for a French-Italian customs union, conceived and aborted in the late forties; this was a project, it will be recalled, which in the name of freer trade substituted private restrictions for tariffs and quotas. Nor is one reassured altogether by the restrictive practice provisions of the Common Market Treaty. The legal principles for a reasonably

effective program to prevent egregious restrictive business practices are there, to be sure, embodied in Articles 85 and 86 of the Agreement. But provisions for their enforcement are contingent upon subsequent decisions of the Common Market's governing bodies. And one is entitled to assume, on the basis of the experience of the Coal and Steel Community, that these decisions will be cautious, restrained, and evolutionary in approach.

Yet Mr. Dixon's main point still applies. One is being almost churlish in his approach if he complains that Western Europe is not moving fast enough in the direction of curbing restrictive business practices. It is enough, perhaps, to realize that the nations involved are moving—and moving at a rate which is at least perceptible. Besides, the very size of the enlarged Common Market may conceivably weaken the hold of the domestic cartels which will continue to operate within it. For, with that enlargement, the probability of the emergence of an undisciplined business maverick in any segment of industry will be proportionately increased. Postwar business history in Western Europe suggests that the maverick price-cutter and cost-pruner can be bred in that environment if conditions are right. And the shaking up which the Common Market will give to power relationships in Western Europe's markets could well enhance the conditions for such breeding.

The question of the Common Market's trading relations with the rest of the world—a subject with which Professor Mikesell deals at length—presents quite another set of considerations. A critical question in the evaluation of the Common Market, as he points out, is whether or not the countries concerned follow a protectionist policy vis-à-vis the rest of the world; and as a special case under this general query, whether or not France's chronic balance-of-payment difficulties will force all of the Six to raise their restrictions against the world in an effort to bolster France's sagging reserves. Drawing partly on the Benelux experience, Professor Mikesell feels strongly that this cannot happen—that either France will move toward external payments equilibrium or the Common Market arrangements will be pulled apart.

Professor Mikesell's observations are cogent, but his conclusions do not seem to me to be self-evident. I do not find it difficult to envisage a situation in which Germany, Benelux, and Italy would reduce their dollar and sterling purchases of wheat, coffee, cocoa, bananas, and other commodities and would shift such buying to the franc zone, thus easing France's plight. And given the intent on the part of the Common Market's participants to achieve a freer movement of long-term capital within the Common Market, I can well envisage some narrowing of the gap between Germany's hard-money policy and France's undisciplined money management, brought about partly by the equilibrating effects of long-term capital flows. There are many halfway houses at which the Common Market may rest in order to accommodate the peccadilloes of its weaker members, and some of these may well involve an increase in restrictions against the rest of the world.

In the various policy choices which confront the Common Market, whether in the field of restrictive business practices or that of commercial policy, a critical influence is the complementary policy of the United States and the

United Kingdom. As far as the United States is concerned, the lines of policy which are being pursued in these fields can hardly be reassuring to the Common Market participants. In the field of restrictive business practices, we are still clinging stubbornly to the somewhat disingenuous view that international agreements on the subject are unwise, that they would only have the effect of pulling down the high standards of behavior which the United States now pursues in this field. And as regards United States commercial policy, it begins to appear that the Trade Agreements Act with which we shall be operating in the next four or five years will be even weaker than the quixotically ambivalent act under which the President is now administering his principal trade powers. If in the end the Common Market arrangement makes some contribution to more tolerable world trading conditions, we shall hardly be in a position to share the credit for the outcome.

FURTHER EXPLORATIONS IN MONOPOLISTIC-COMPETITIVE PRICE THEORY

THE USES OF DIVERSITY: COMPETITIVE BEARINGS OF DIVERSITIES IN COST AND DEMAND FUNCTIONS

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I. *Introduction*

This paper is concerned with some aspects of the formidable problem of defining conditions under which the action of competitive forces may be both feasible and effective in an industrial age of gigantic units and massively-applied science and all the difficulties they bring with them.[1] By way of normative criteria, we want the efficiency of large-scale production and the progress stemming from applied science, including varied products to choose from and favorable conditions for choosing. We want all this without losing the essential protections of competitive forces; but these essentials obviously differ from "pure and perfect" competitive equilibrium, thus challenging us to define desirable departures, inherent in competitive progress. After all, "perfection" is not a relevant standard by which to judge an endless dynamic process of creation and erosion of temporary innovational positions and competitive differential advantages.

One of the chief things that goes with competitive progress is diversity, of many sorts, in methods and scale of production and in resulting costs and cost-price relationships. Products are differentiated —this we want—and so also are methods of distribution and sales promotion. There are diversities in the time perspectives habitually envisaged by different producers or pertinent to different situations or different kinds of decisions; and there are corresponding differences in the minimum necessary return different producers require and in the scope of costs pertinent to different decisions, from full cost if it is a question of enlarging a firm's capacity down to short-run marginal cost if it is a question of finding temporary ways of putting idle capacity to work. Of two firms in the same industry at the same time, full cost may be pertinent for one and short-run marginal cost for the other. Back of all this, it turns out that the basic idea of cost itself is one on which differences of opinion and practice exist.

[1] Instead of trying to review the literature, the reader is referred to the text and footnotes of Willard D. Arant, "Competition of the Few Among the Many," *Q.J.E.*, Aug., 1956, pp. 327-345. Also E. H. Chamberlin, "The Product as an Economic Variable," Feb., 1953, pp. 1-29, and "Second Supplementary Bibliography," Nov., 1956, pp. 613-643, *Q.J.E.*

It is proverbial that people will fight harder to prevent a decrease in their incomes than to gain an increase, especially if the decrease threatens economic survival; and this causes diversities in the motives to aggressive and defensive competitive action—a much-neglected distinction which is of great importance, since both kinds are necessary, acting in complementary fashion, to bring about a healthy competitive situation in industry and trade. Theory tends to treat product differentiation solely as a building of defenses against competition, but it is also an aggressive competitive appeal. Competitive incentives are greatly strengthened if the contemplated increase or decrease of business or income, instead of being finite and timeless (as formal diagrams represent it) is progressive over time. If a firm starts suffering a decline in business which might become progressive over itme, the crucial importance of defensive action to prevent this from happening is only too obvious. Related to this are diversities in the elasticities of the individual-demand functions of different firms in the same industry. And there are many more forms of diversity.

Some kinds of diversity may be unconditionally harmful; more often the problem turns into an attempt to identify healthy kinds and degrees of diversity and to distinguish them from harmful ones. For example, some differences in efficiency are an inseparable accompaniment of progress by the experimenting of independent producing units; and a healthy degree might be defined as one that rewards the successful innovator adequately but does not give him a permanent or insuperable advantage over his competitors or exempt him from the need of continued vigilance and effort if he is to maintain a satisfactory position relative to his rivals. This implies that some of the latter are close enough to have a chance of catching up with him or passing him. In the sum total, I am persuaded that healthy degrees of diversity are an indispensable condition of the persistence of effective competitive forces in modern industry and trade.

Theory, qua theory, contains a built-in predisposition against diversity, or qualitative innovation. Here diversity spells adversity, complicating theorems and spoiling their precise determinateness. As one example of unobtrusive methods of sweeping such difficulties under the rug, the familiar envelope curve of costs relative to output neatly abolishes the difference between long-run and short-run marginal costs by making them equal at points of tangency which are supposed to represent the strategic situations but which actually have meaningful existence only in the realm of diagrammatic fiction. Really adequate treatment of the effects of diversities calls for a reappraisal which might be agonizing to the theorist, qua theorist, but might be cheering to people without methodological vested interests who would be glad of

positive reasons for qualified optimism as to the effectiveness of competition.

II. *Forms of Competitive Action*

Competition is a composite of actions in four different fields. These include methods of production, selection and design of products, selling activities, and pricing. "Pricing" may refer to actual prices, in which case it is relevant to the short run only; over longer periods it relates to pricing policies or habitual relations between a firm's prices and its costs or the prices of its competitors. Price action includes both publicized and general changes and unpublicized and differentiated ones. Competitive action in industry and trade includes initiatory actions by firms aiming to increase their incomes by increasing their sales volume at rivals' expense, and defensive responses by the rivals, of varying kinds and varying degrees of promptness and effectiveness. It also includes action in anticipation of foreseeable responses. The initiatory opportunities and the responses differ from firm to firm, and except for openly quoted price changes on standardized products, they involve time lags and uncertainties; and the prospect of rivals' responses seldom deters all firms from initiatory action of one or another of the above sorts.

This suggests the hypothesis that in an active market, the pace for the whole tends to be set by those firms whose opportunities and whose perspectives about them lead to the most vigorous competitive action, or those subject to the most urgent pressures of necessity, which have similar effect.[2] Examination of this hypothesis leads to the question of what kinds of firms have this strategic character, under what conditions their action may be effective, and what degrees of competitive pressure they may exert on the rest. This opens up the question of cutthroat competition (including other forms than price cutting) and of deterrent factors including trade discipline, reprisals, and imponderables like Marshall's "sentiment against spoiling the market."

III. *Diversities in the Field of Costs*

Cost of some sort is supposed to set a minimum below which sales will not be made. But cost is not a precise, unambiguous objective fact; it is rather a convention allowing considerable latitude. In a highly dynamic economy, obsolescence is an important element of cost and is unavoidably conjectural until it has finally materialized. The minimum necessary return to owners' capital, allowance for risk,

[2] Cf. Arant, *op. cit.*, pp. 344, 345, and Dean A. Worcester, Jr., "Why Dominant Firms Decline," *J.P.E.*, Aug., 1957, pp. 338-346, especially p. 343, footnote 1 (citing W. H. Nicholls) and 337, footnote 5 (citing D. M. Keezer).

and "wages of management" are also quite inexact. And it seems established that the minimum necessary supply-price of this bundle of functions is smaller if they are all furnished by one person, and register as his personal sacrifices of production, than if they are furnished by different persons, each of whom has to receive dollar compensation for the factor he has contributed. This helps explain how small enterprises continue, with substandard earnings. Wherever such personal supply functions affect market behavior, they act differently from financial expenses. They may be highly inelastic, or may even have reverse elasticity.

This inexactness of elements of cost impairs the validity of what appears superficially to be a self-evident proposition; namely, that a firm will prefer a profit on a smaller volume to no profit on a larger volume; and if it faces a sloping individual-demand function, it will raise prices until the resulting limitation of physical volume cancels the gain by raising unit costs. Yet actual firms attach much importance to growth in volume and would be surprised to be told that they deliberately limit their volume to less than the most efficient scale. The paradox is resolved when one realizes that "no profit" includes a substantial, but highly indefinite, amount of income accruing to ownership, management, and enterprise; with the result that it is quite rational to prefer "no profit" on a larger volume to "no profit" on a smaller volume, or even to a precarious and temporary "profit" on the smaller volume. The importance which firms attach to growth may contain some irrational elements, but it rests on a rational basis.

Suppose that in a given industry a majority of firms would, if feasible, price for profits liberal enough to invite an influx of new entries which would bring the profits down by dividing up the business into uneconomically small units. But suppose, also, a second group who price at some variety of "full cost" with a view to precluding such an influx, and a third group whose immediate financial pressures drive them to seek extra business regardless of competitors' responses and at less than full cost if necessary. Here we have three grades of perspective; and the most natural hypothesis is that the second and third groups—representing the shortest and longest—would gain business at the expense of the first group—which represents an intermediate degree of shortsightedness—forcing the first in self-defense to meet their competition. The third group might exercise a check on any tendency of the second group to adopt an unduly liberal conception of full cost. Is not some such interplay of diverse perspectives more probable than the assumption of a uniform view of cost and a uniformly shortsighted selling policy based on it?

The policy of pricing for a temporary profit which attracts potential

competitors may apply more aptly to the stage of growth of a single product innovation in a firm's line than to its permanent policy for its entire output. While a product variant is first being introduced volume will be limited and substantial margins are ordinarily charged, but may fail to yield a profit unless the innovation catches on. If it does, sales will expand, pointing the way to larger volume and more profits on thinner unit margins. Meanwhile quality may be improved, deteriorated or differentiated. In the final stage of success, the product becomes a staple in the trade, produced in large volume on narrowed margins—at which stage the originator may shift his active interest to some fresh item. The special point here is that the temporary profits are made during growth, and the outcome is larger volume per firm rather than inhibited volume.

Three kinds of variation of costs have important bearings on competition: long-run variation with scale of production, short-run variation within the capacity of existing fixed productive equipment, and differences in cost between different firms not accounted for by the first two factors. As to the third kind of diversity, it means that efficient firms may, while still making some profit, put forth offerings that less efficient firms cannot meet without going below their full cost. To this result, a "horizontal individual-demand curve" is not necessary. There is also a fringe of firms making losses, and they must improve or they will ultimately be driven out. This fringe shows a turnover in membership, but where firms are fairly numerous it shows no apparent tendency to disappear. If the differences in efficiency are unduly great, it may mean that customers are not getting as much of the benefit of existing techniques as the health of the economy requires.

Yet one would hesitate to recommend absolute equality of costs as an ideal. Firms whose pioneering in efficient methods of production has been successful enough to give them a margin of competitive security may use this margin for further pioneering in quality of products and in industrial good citizenship, without worrying too much if some of their experiments in this direction turn out unremunerative. The result may be the testing of methods that may raise the general level of practice in ways that might not have occurred if every firm were forced to practice the utmost dollar economy on penalty of losing out in the competitive struggle.

As for long-run economies of scale, the balance of evidence seems to point to a typical condition in which the bulk of the output comes from firms that possess the main economies of scale, and only firms of really substandard size have materially higher costs as a result. It follows that in most cases long-run marginal cost does not differ substantially from average cost. One complication is that optimum scale in different

activities—management, financing, research, procurement, selling and distribution and different departments of physical production—is reached at different sizes.[3] Hence a firm may have to choose between less-than-optimum scale for some of its activities and larger scale than needed for optimum economy in the others. For example, it seems that financing, research, national advertising, and distribution reach full economies of scale at an output larger than is necessary to get the full economies of physical production in a single plant. But competition in research is also valuable. This problem permits a variety of solutions, with different combinations of integration and the opposite.

Finally, there is short-run variation of cost with varying output within the capacity of existing facilities. Here perhaps the chief bearing on competition is that marginal cost is substantially below average cost, so that in spite of a sloping individual-demand curve, which permits a price well above marginal cost, price may still be below average cost. This is likely to happen to the firms with the less successful offerings. One highly competitive situation in this class is illustrated by rail and truck transport, between which there is a zone of active substitution, but no clear agreement as to where the point of parity lies. The existence of unused capacity, which involves this problem, is, I would argue, a natural competitive condition. Its wastefulness may be minimized by keeping stand-by capacity which has outlived its usefulness for full-time employment but is still an economical way of providing for peaks. The elasticity of the labor force may be a larger problem than the waste of partly idle capital.

Passing over these problems, I will pause for a moment on one; namely, how much unused capacity does it take to make short-run marginal cost instead of average cost a potent factor in competitive pricing? The answer depends on a number of conditions, especially whether one is considering a general cut in the price of the firm's product or has in mind ways of disposing of parts of the firm's output in special market sectors where the price can be reduced without flowing back into the main market, or with only a limited flow-back, and where the firm will not be building up a customer's vested interest that will cost it good will in its regular market if it ceases to give the special terms in the special markets because its regular market will now take its full output. The answer is also likely to depend on whether sales are expanding or contracting and whether the firm's competitive situation is aggressive or defensive.

If a firm is working at 90 per cent of capacity and if by cutting its margin above short-run marginal cost by 10 per cent it could expand

[3] E. A. G. Robinson gives a very good treatment of this problem, in *The Structure of Competitive Industry* (1932).

its sales to full capacity, it would break even on the increased volume, but then it would be facing not short-run marginal cost but full cost, plus a probable need of raising capital to expand its capacity. It is unlikely to reduce its price that much, unless its volume threatens to shrink progressively below 90 per cent of capacity, in which case it might make a deeper price cut in an attempt to stop the shrinkage.

IV. *Diversities in the Field of Demand*

We are dealing, not with the produce-exchange type of market, into which a seller brings a supply, and the aggregate of supplies makes the price, but with the kind of market in which a seller who wants to enlarge his supply must do something to create an enlarged demand for his product. And the essence of competitive pressure may be epitomized in an individual-demand function that is more elastic than the demand function for the product or the industry as a whole, whether or not it approximates the horizontal. In principle, this concept of elasticity needs to be extended to cover the response of sales to increased selling effort or increased outlay in making the product more attractive.

Where a product is differentiated, the meaning of the demand function for the aggregate of all the varieties presents a problem, especially where there is a scale of quality that runs from high-priced to low-priced grades. A proportionate reduction in all the prices in the scale will normally result in shifting demand upward in the scale of quality, on account of its income effect. Conversely, a general price increase may actually increase the demand for the lowest-priced grades. Something of this sort seems to be happening in the automobile market at present, as the increased cost of owning and operating a car has led to a notable increase in the sales of small, fuel-economizing foreign cars. Thus a general shift, upward or downward, in the scale of prices is likely to lead to an opposite shift in the scale of quality.

Where individual elasticity exceeds product elasticity greatly, it is primarily because of getting business away from one's rivals; that is, cross-elasticity. This brings into play the difference between aggressive and defensive action, the importance of which has already been stressed And cross-elasticity has an even more neglected peculiarity; namely, that a given transfer of business from A to B represents different cross-elasticities for A and B if their existing volumes of business are different: a 20 per cent gain for B may represent only a 2 per cent loss for A if A's volume is ten times B's. The same arithmetic would apply if B's encroachments were evenly distributed among ten firms whose total volume added up to ten times B's, though in an actual case, the encroachments are not likely to be evenly distributed.

The closer competitors will lose a larger percentage of their business and will be correspondingly more likely to make some defensive response. But the very large firm may not find it worth while to meet one small firm's competitive move unless it can localize the rivalry, especially if the small firm's inroads do not cause an absolute shrinkage in the large firm's volume of business; merely a smaller rate of growth.

These diversities give the relatively small firm an opportunity; and this emphasizes the importance of such relatively small firms for the persistence of competitive forces. In contrast, in an industry consisting of three or four giants and no others, any gains made by one are matched by commensurately large losses to the others, bringing prompt and powerful responses; and this is why active competition between giants is proverbially so severe that it is not likely to remain long at full strength. And if one could find an industry in which the firms were more numerous but all of the same size and all with individual-demand functions of the same elasticity, their reactions and responses would be so similar that they would in all probability learn to anticipate them, and competitive forces would reach the familiar oligopoly stalemate.

If diversity of size creates differences in cross-elasticities in terms of price, does it have a similar effect in terms of competition in quality, between luxury and economy types of product? The question requires some degree of customer competence sufficient for real, if imperfect, quality-competition. Assuming this I suggest, as worth testing, the hypothesis that competition between a few giants is biased against the economy model; and that better balanced competitive pressure in this field hinges on the existence of competitors who, while large enough to command the resources of applied science and technology, are still small enough, relative to the total sales of a given product, to have room for a really large percentage increase in their physical volume of sales, which would be necessary to offset the smaller dollar margins per unit on the economy model. If an economy model sells for 20 per cent less than its closest competitor, it must sell 25 per cent more units to yield the same gross income. If the economy model diverts sales from the same firm's higher priced competing models, the firm must create new sales volume or get it away from competitors merely to keep its gross dollar sales from shrinking. A giant firm, with limited room to increase the number of units it sells, may see a better prospect of increased dollar volume in packing more "utilities" into each unit.

From this standpoint, the recent history of the American automobile industry is suggestive. The dominant drive is toward increasing cost and sales value per car. To date of writing, none of the big three has produced an economy model adapted to the American market. That has been left for the smaller, more struggling competitors, despite the

interest in economical models evinced by the increased sales of small foreign cars, which are not adapted to serve as staple family cars in the American market. This appears, as far as it goes, to bear out the hypothesis that competition in quality tends to be biased in an industry of too few and too large competitors.

This principle may apply with peculiar force to improvements which increase the durability of the product, since this kind of improvement can result in decreasing the total volume of sales because of the slower rate of replacement.[4] The more obvious kinds of competitive incentives to initiating this kind of improvement seem logically to depend on firms small enough to have room to multiply their share of the market, especially if the improvement in question increases durability substantially in one move. As for giant firms, in the absence of pressure from competitors which might drive them to defensive action, their incentives to this particular kind of improvement are far from obvious and simple. Notable improvements of this sort have been made; facts as to the holding-up of economically feasible improvements are less accessible. Analytically, an intriguing variety of patterns is possible. Even the effect of an active "used" market—which should be favorable—is marked by crosscurrents. By and large, the inherent logic of the case seems more favorable to gradual cumulative change through small increments than to single changes large enough to threaten a shrinkage of the innovator's own sales volume. For full explanation, one should envisage the possibility of a complex of motivations, including some not derivable from profit maximization as usually conceived, working themselves out in the administrative structures of corporations whose position, both of security and of having given hostages to fortune, is consistent with a very long-run perspective. We could use more knowledge of what the "instinct of workmanship" does to a huge modern corporate research department.

V. *Conclusion*

The analysis here presented points toward the strategic importance, not so much of a single type of representative firm as of interaction between firms of different sizes, costs, perspectives, elasticities of demand and aggressive or defensive attitudes or situations. In such interaction the importance of huge firms is obvious; but it appears that a strategically important role remains for the efficient but relatively small firm as to competition both in price and in quality.

[4] This problem is referred to by Chamberlin, "The Product as an Economic Variable," *op cit.*, p. 23; and by Hans Brems, *Product Equilibrium and Monopolistic Competition*, pp. 140, 239-240.

COST ACCOUNTING, POLITICAL ECONOMY, AND THE LAW

By WALTON HAMILTON
Arnold, Fortas & Porter

A physicist—that is, a good physicist—will tell you that we do not know about matter; that we only know about matter in terms of questions which we have asked. A student of society—that is, a good student of society (I am not talking about social sciences)—will tell you that we know about the economy in terms of the questions we have asked. These questions depend upon our habits of thought, the institutions under which we carry on, and the cultural matrix in which they are set.

At the turn of the century a discipline known as classical economy rode high. It was an account in static terms of the operation of an economic order. It was alike systematic and met the standards of symmetry and beauty. It was as true as the premises upon which it was built were realistic. In the first two decades a challenge came that it did not explain the national economy and for a time there was a militant onslaught. At last, however, the protestants learned wisdom, and instead of attacking they sought to push forward trails which bypassed this body of theory. They saw a need for a discipline which was more realistic, which recognized variants, which approached the economy as a developing thing; which recognized that its structure and practices were subject to change and that there was a place for inductive as well as deductive work.

At its recent Centennial, Columbia University put out a series of publications. Only one of these fell into the domain of economics. That was the work of Henry Carter Adams, whose theme was the role of the state in industrial activities, a volume including his presidential address. I would not have made this choice, but I heartily concurred in it when made. It was recognition of a return to political economics. It also attempted to break down the frontier lying between economics and ethics. It accepted the competitive system as an instrument of well-being and insisted that in its operation the state had a function to perform. That function was to maintain a fair field and no favors; or as Adams put it, to establish and maintain a moral plane of competition. This essay either was a catalyst to the development of public policy or it ran along closely parallel with it. The essay translated into statecraft finds expression in the Clayton Act and the better parts of the Robinson-Patman Act. In Section Two, as amended, it is decreed

that a producer shall not charge different prices to different customers unless the difference makes only due allowance for differences in production, transportation, or sales. Civil and criminal penalties are provided for the breach of this provision. Thus the difference between the lawful and the unlawful is made to turn upon an adventure into cost accounting.

In Volume 87 of the Federal Supplement you will find set down three decisions of several district courts, each supported by an opinion in cases involving the American Can Company. One is the suit of the government—*U.S.* v. *American Can Co.*—for violation of the Sherman Act. The other two are private actions against the same company. The one bears the name *Russellville Canning Co.* v. *American Can Co.;* the other has the unbelievable style of *Bruice's Juices* v. *American Can Co.* In the last two the cause of action is based upon prices discriminating in favor of large against small customers. In the case brought by the government the judge points out that the violations of the Clayton Act are themselves mere instruments employed in the violation of the Sherman Act, for by the devices through which large customers were favored, they were prevented from setting up their own canning plant and new canners were kept out of the industry.

In each of the two private suits, the venture into litigation turned upon the ability of American Can Company to show that differences in price were justified by differences in the costs of serving different classes of customers. In the Russellville case, officials of the company appeared and justified the differences and were subjected to rigorous cross-examination. The venture into litigation involved a probing, comprehensive and penetrating, into cost accountancy, and the officials of the company failed to meet the challenge.

This venture into cost accountancy is only one of many which the annals of the law reveal. Problems of like kind come up constantly in respect to public utilities. They are reflected in cases involving ocean shipping, air transportation, gas and oil and kindred domains of the economy. Fully as important is the relationship of cases occurring within the orbits by the prices and price policies of the producers of commodities and services. In a well-run enterprise each separate product is supposed to pay its own way, but this principle is compromised by the fact that a company frequently must turn out a whole line of products to hold the market and some items will not pay. If a concern turns out multiple products, a bothersome problem of allocation arises. There are various ways of handling it, no one of which is quite right. The general disposition is to assess costs in terms of the several items that bear the burden, which involves an argument in a circle. In what is known as the "conglomerate merger"

a number of ventures, distinct in kind, operate as a single business unit. Here neither political economy nor law has managed to solve the problem and accountancy has not even made a start. These instances are representative and can be multiplied many times over.

It is in the domain where law, statecraft, and cost accounting meet that a series of fascinating problems is to be found. We need a study of the national economy in operation made up of a host of minor studies. The stuff here is realistic, colorful, and dramatic. Its subject matter is one of the streams of human behavior. The studies cannot be done upon the assumption that mankind is inert and static, or that human behavior can be reduced to an orderly series of plotted curves. If such studies are not of enduring value, the same goes for the phenomena with which they deal; for after all, the search for knowledge is a continuing process that must forever pass from hypothesis to hypothesis but will never attain eternal verity.

DISCUSSION

CLARENCE E. AYRES: These two papers are both unusually significant and provocative. They are so, I think, because they direct our attention back from the minutiae of the equilibrating apparatus to fundamental meanings. Neither competition nor monopoly, it would seem, is an actual safe haven which an economic mariner can reasonably expect to reach. Both are abstractions, projections of human impulses and aspirations, like heaven and hell, one evil and the other good; or perhaps compass directions by which we seek to navigate the stormy seas of economic actuality.

In reflecting upon these meanings under the potent stimulus of these two distinguished writers, it has occurred to me that our thinking about competition and its opposite has all along confused two meanings. One of these might be described as justice oriented and the other as power oriented. That is, in advocating competition, what we have all along been advocating is justice; and in attacking monopoly, what we have been attacking has been the exercise of economic power.

Obviously these two meanings are closely related. Otherwise they would never have been confused. But if we reflect upon them, I believe that we are sure to see that they are not identical, not positive and negative of each other. Disarming a powerful adversary is one thing and doing justice is clearly something else.

As every school boy knows, the economic doctrine of competition was formulated at a time when men of good will were increasingly concerned about the power of great trading companies. As we are continually reminding our students, *The Wealth of Nations* was a sort of political tract attacking the patents of monopoly under which the great trading companies operated. But as such it went far beyond mere muck-raking. Not content with attacking evil, Adam Smith went on to lay the foundations of the modern doctrine of economic justice.

In a sense, this was inevitable. The idea, or ideal, of economic justice is a very ancient one. To go no farther back, it had been the central economic doctrine of medieval theology. Obviously, the medieval criteria of what constituted a just price were scarcely applicable to the modern world. But if just price could be defined in terms not of social status but of economic process, and a process in direct antithesis to the procedures of the monopolistic trading companies, then monopoly would have received an intellectual *coup de grâce*. A just price is one that is established in a free market under conditions of pure and perfect competition. Monopoly prices are established quite otherwise. *Ergo,* monopoly is unjust and bad.

In thus schematizing our intellectual history, I do not mean to suggest that I am reproducing the thought processes of Adam Smith or those of his generation or century. But surely it was in some such fashion as this that the concept of competition came to be identified in the Western mind with that of economic justice. How else is it possible to account for the idealization

of competition—an idealization so general and so profound that it has been a major obsession of the Western mind for several generations?

Nevertheless, the identification of competition with justice is wholly putative, and for what seems, when we stop to think of it, a very obvious reason. We have no precise knowledge of what constitutes justice. It was once supposed that even without such knowledge we would be guided toward justice by the apparatus of the market and that our attainment of that ideal would be signalized by a state of equilibrium. All that stood in the way was a few "unnatural restraints." But we have learned that unnatural restraints are many and various—in a sense all human institutions are unnatural restraints—and that prices may reach equilibrium anywhere along the economic spectrum from pure and perfect competition to absolute monopoly. In short, equilibrium is just equilibrium—"just" in the sense of "only"—and provides no clue to economic justice.

This, I judge, is what Professor Clark means when he remarks that "perfection is not a relevant standard by which to judge" economic actuality, and something like this is the basis of Professor Hamilton's strictures upon the spurious "symmetry and beauty" of classical theory. The truth is that we can come to grips with these meanings—of competition and monopoly—only by orienting them to the exercise of power. Even the concept of competition has clear and definite meaning only as a derivative of the concept of power. A given price is truly competitive, so we say in effect, only if it is set in a market in which no seller or buyer has any power over any other sellers or buyers.

Both as a matter of theory and as a matter of public policy, the problem is that of power. As Professor Hamilton points out, the antitrust laws do not enact justice; they attempt to define and forbid the exercise of overweening power. "In an industrial age of gigantic units and massively applied science," says Professor Clark, ". . . we want the efficiency of large-scale production and the progress stemming from applied science, including varied products to choose from and favorable conditions for choosing. We want all this without losing the essential protections of competitive forces; but these essentials obviously differ from 'pure and perfect' competitive equilibrium, thus challenging us to define desirable departures, inherent in competitive progress."

Now all this seems to me highly significant. Traditionally the attack on monopoly has been conceived in terms of competition signalized by price equilibrium. That is, in attacking monopoly our purported objective has been that of establishing or re-establishing competition, with its overtones of just price. It has even been said that there is no escape from the disjunction of competition and monopoly—that one must be either for competition or against it and thus presumably for monopoly, either private or public. But these papers seem to me to show that this is not so. The disjunction is incomplete. We can, and do, attack monopoly as an improper and harmful exercise of overweening power, without idealizing either the people or the economic functions which are or might be harmed, just as we proceed against murderers without idealizing their actual or intended victims.

That in fact is what parliaments and courts have done, as Professor Hamilton makes abundantly clear. Professor Clark speaks the language of price theory. But the difference, it seems to me, is only one of dialect. What he is concerned with is defining situations in which power is wielded by large firms over small firms, or by monopolists or oligopolists over the public. In one of his most celebrated papers, delivered before this Association in this city eighteen years ago, Professor Clark used a phrase which has become a part of our language. He spoke of "workable competition" and of "fairly healthy and workable imperfect competition" and what he meant, as I understand it, was and is a condition of affairs in which, however far it may deviate from ideal justice, at least economic murder and mayhem are more or less effectively prevented.

RICHARD B. HEFLEBOWER: Both speakers on this program are dissatisfied with the economists' ability to analyze and appraise the industrial sector of the modern economy, but that is about all there is in common between their papers. Mr. Hamilton's protest is that of the institutionalist who sees no prospect of progress within the framework of neoclassical price theory. Professor Clark, on the other hand, accepts that framework as having asked the relevant questions but finds it deficient in providing the theoretical structure by use of which answers can be derived. The defect lies in its precision and, what to a considerable extent is the same feature, in its generality. His search is for a less general theory or a theory with numerous subdivisions, which he contends will be more valid. How do we make progress? This requires a stand on a methodological issue.

Despite Hamilton's invitation, little can be gained from a rerun of the old deductive theory versus institutionalism controversy. We have progressed well beyond that debate of decades back—in part, because we have sharpened the distinctions among normative economics, positive economics, and the art of economics. By the latter, I mean the making of policy judgments when the theory is not perfect and the information for its application far from adequate. Beyond that—and in disagreement with Mr. Hamilton—theory does ask the right to questions; I am not impressed, where Mr. Hamilton's questions are different, that they are either clear-cut or meaningful. The deficiencies in price theory must lie in its limited usability in studying some of the complex interrelationships involved in answering the basic questions. But Mr. Hamilton's example of cottonseed crushing from which four products are derived in fixed proportions is not such a case. Of all price problems, such cases, or even those of joint products with variable proportions, are handled most adequately by neoclassical theory. Only when products such as steel, to which Hamilton also refers, are examined do we face unresolved theoretical issues. These are in the familiar area of fewness of sellers combined usually with a variety of reasons why one seller's product is preferred over another's. It is to this group of problems that Professor Clark's work is addressed.

In his paper, Clark develops another phase of his search for a body of theory by which to analyze "an age of gigantic units and massively applied science." The critical question is whether we can realize both the

potential efficiency of that age and the "essential protections of competitive forces." His answer appears to be clearly more affirmative than he—and probably most economists—would derive from attempts at theorizing about oligopolistic markets. Clark's earlier papers question the validity of attempts to appraise markets in terms of long-run static equilibria when they are in continual and strong flux, and the omission, by *ceteris paribus*, of variables which he holds influence, and may dominate, the performance of these markets. Today Clark refers again to these neglected "parameters of action," to use Scitovsky's term, but his major concern is with diversity where theory, in its quest for generality, has assumed uniformity. Competition succeeds because it is imperfect and imperfections are best seen in certain diversities. How general should a theory be or how much uniformity should it assume?

Most of this diversity can be handled formally by comparative statics. Diverse firms' costs, if other than transitory, become uniform if one adds the rents obtained by the low-cost producers. More likely, what Clark had in mind is that diversity in costs may result in limited rather than full joint profit maximization in an oligopoly, but he does not work out clear functional relationships between diversities in sellers' costs and the level of selling prices.

Diversity in what customers want (or will buy) restricts the size of each of the "markets" or segments of the market for a commodity. In the end, each market or product is that of the individual seller as in monopolistic competition—but with high cross-elasticities among such narrowly defined markets. Even when using product rather than the price as the variable, one can work out the problem of long-run static equilibrium.

What Clark does not show specifically is how his view of diversities and of their effects differs from those worked out in extant theory. One avenue he might pursue is that of the effect of diversities on each firm's view of rivals' reaction to its initiatory moves; e.g., where firms are not of the same size and do not have individual revenue functions of the same elasticity. It might be specified that the larger the number of parameters of action and the less uniform the cost and demand situations of the rivals, the lesser the degree of conjectural interdependence. One might even assert that conjectural interdependence declines at a geometrical rate as the number of alternative courses of action, or of elements of diversity, is enlarged.

Keeping in mind the series of papers by Clark over the last twenty years, it would seem that he has more than this in mind. He is proposing a mixed framework with some static elements to be sure, but also with a strong historical-dynamical content. He holds that the markets of major concern rarely move far toward a point of (long-run) rest before they are disturbed by happenings at particular dates. For example, his three groups of companies with different price policies reflect a temporary equilibrium in an industry not in long-term equilibrium. In addition, according to his argument, when product and process change are potential courses of action, but of uncertain timing or effect, dynamic analysis is necessary. Over and above such specific points, it seems that Clark views each oligopolist as facing uncertainties which lead him to act competitively with respect to certain parameters of action and these actions are effective in forcing prices toward the competitive level.

These uncertainties, presumably, encompass a firm's doubt as to the form and effectiveness of rivals' actions or a hope that its own cannot be imitated promptly, or will be uniquely successful. Beyond that may be uncertainty as to exogenous forces such as a break-through in the industry's technology or appearance of a satisfactory substitute product. Not having confidence in estimates of these intraindustry or outside possibilities, the firm elects to be a lone wolf. So by use of such a mixed framework and assuming the direction of influence of the added and different type of variables, the conclusion is reached that markets that appear to be oligopolies tend to act competitively.

By comparison with static price theory or even with dynamic income theory, the working out of this complex theoretical framework is an enormous undertaking. Professor Clark has given us his reasons for being dissatisfied with static equilibrium theory. He has suggested variables that he thinks should be part of a more adequate but more complex and, in a sense, less general theory, and he provides suggestions of how results from markets where these variables are important would differ from those deducible from extensions of static theory. But the functional relations among these variables and their effect on the efficiency of resource use and prices is not clear, particularly in today's paper. Doubtless that fact reflects the extreme difficulty of visualizing the major features of the theoretical structure toward which Clark is working: the parts cannot be made fully meaningful until the whole is comprehended. Professor Clark's progress toward that comprehensive structure will be watched with interest by all students of price and output theory and of the related policy issues.

PETROLEUM AND NATURAL GAS AND THE PUBLIC INTEREST

NATURAL GAS: COST, CONSERVATION, AND PRICING*

By JOEL B. DIRLAM
Boni, Watkins, Jason & Co.

As I consider it here, the problem of selecting the appropriate public policy toward natural gas focuses on its field price rather than on the somewhat more settled area of control of pipeline rates. I recognize that my inquiry treads closely on the heels of Senator Douglas' magisterial survey[1] and the papers of Professors Lindahl[2] and Howard.[3] Nevertheless, there are circumstances that justify reconsideration of the issue. The Harris-O'Hara bill will be revived in the session of Congress shortly to be convened. Moreover, extensive evidence on cost of service for gas producers has been recently introduced in Federal Power Commission proceedings. And an appraisal of policy toward field price inevitably requires re-examination of the role of natural gas as one element of our scarce and exhaustible supply of natural resources. The discussion falls most conveniently under three interrelated headings, the first concerned primarily with the economics of tampering with price on the supply side of the market, the second with the workability of regulation, and the third with what are colloquially known as conservation problems.

I. *Should Price Be Controlled?*

In the interests of conserving time, the merits and demerits of price control will be discussed on the assumption that it means regulation on a cost basis—not the rubber-stamping of the results of private negotiations.

The case against regulation may be said to rest primarily on the ground that the market for natural gas in the field is either purely or workably "competitive." Market price, according to this view, will, as Professor Lindahl expressed it, "perform its function of rationing the available supply of this irreplaceable resource among the regional

* Although they accept no responsibility for his conclusions, the writer would like to acknowledge extensive discussions of the natural gas problem with Jules Joskow, Irwin M. Stelzer, and Myron W. Watkins and the helpful criticism and suggestions of Alfred E. Kahn.

[1] *Congressional Record*, Jan. 20-25, 1957.

[2] "Federal Regulation of Natural Gas Producers and Gatherers," A.E.A. *Papers and Proceedings*, May, 1956, pp. 532-544.

[3] "Regulation and the Price of Natural Gas," *S. Econ. J.*, 1956, p. 142.

markets and its possible uses."[4] An unregulated market price would also provide "the incentive for exploration and development under higher cost conditions and the reduction of field waste. . . ."[5]

Parenthetically, a short answer to this argument might be that, the oil industry, which is responsible for most of the gas production, has exhibited loyalty to a free market for crude oil in a Pickwickian sense only. But Professor Nelson's path-breaking paper makes unnecessary further exploration by me into the curiosities of oil country economic terminology.

We do not know what takes place during the bargaining sessions between transmission companies and producers. But—at least till the Memphis decision[6]—the considerations that would usually induce an industrial buyer to get the best price available did not weigh heavily with the pipelines, since they could count on passing on the cost of gas to the distributors.

The supply curve for gas from undedicated, conveniently located natural gas acreage, during any given period of negotiations, is likely to be extremely inelastic. The demand, for obvious reasons—time pressure on the pipeline to accumulate the reserves necessary for certification, the commitments of the distributors, and, ultimately, the uniqueness of natural gas as a cooking and heating fuel—must also be quite inelastic. No collusion among sellers is necessary, as long as they are adequately informed about the limits of pipeline demand, to enable each to take advantage of the maximum point of coincidence of the two inelastic curves. Uncommitted proved acreage of the desirable sort has been for practical purposes extremely limited compared with pipeline needs for a supply necessary to stimulate investment. The market price, even in the absence of oligopoly, may therefore be far above the short-run marginal costs. To stress the obvious, the gas, while producible, has other characteristics of a nonreproducible good, and its supply, even in the short run, may be said to be fixed and discontinuous with reference to other acreage and gas already committed to pipelines. Price in these circumstances confers at least a quasi-rent upon the owners or lessees of the acreage; it does little to call forth additional supply during the particular market period in question. In fact, as long as states prohibit the flaring of gas, producers can afford to sell at a negative price to permit oil production to get under way.

Conditions are now such that, as a representative of producers expressed it, pipelines have to "blast" their way into the market. In the

[4] *Op. cit.*, p. 543.
[5] *Ibid.*
[6] *Memphis Gas, Light and Water Division* v. *FPC*, D.C. Cir. No. 13666, Nov. 21, 1957.

CATCO case, for instance, Tennessee Gas Transmission's vice-president testified that "these reserves which would amount to a substantial portion of Tennessee's total reserves, not only constituted the only large package of gas for sale in the Gulf Coast area at the time of negotiations, but were well located with respect to Tennessee's system."[7]

The CATCO and similarly negotiated new contract prices indicate that, without cost control or FPC suspensions, field prices might easily rise to double or more the 1954 levels in a matter of months.

On the other hand, in the case of more important fields where gas does not appear in association with oil, the price must be high enough to justify the costs of development drilling either for it alone or for the condensate. Another possible source of elasticity arises from the capping or uncapping of gas wells depending upon the anticipated course of future price. Nevertheless, as to the first direct influence of price on development, the verdict must be Scotch. Nor is there an a priori reason for expecting such elasticity—if it exists—to extend far, since incremental costs are relatively small once a field has been discovered, and gas rises by natural pressures. As for the second, a higher price might also, in the short run, lead to uncapping of wells previously held out of production. But it seems equally true that if gas producers who have sizable reserves not yet exploited were certain that prices would not rise sharply in the future, they would not hold reserves off the market. With these exceptions, however, a gas price increase in the short run cannot affect supply, because direct costs of production are inconsequential and because state limitations on oil production restrict the rate of gas production without reference to price.

What of the long run? To the extent that natural gas is discovered in the search for oil, in the form either of dry fields like the San Juan Basin or the Panhandle field, or of condensate, or simply associated gas, its supply would seem to be as inelastic in the long run as in the short—or even more so. No oil company classifies its dry holes between those drilled in search of oil and those drilled in search of gas. With the published statistics of the oil industry, it is practically impossible to obtain a meaningful series on exploratory expenditures. Efforts to discover what, if any, relation prevails between the price of gas and exploration (assuming we can know which of the widely varying contract prices is the price wildcatters have in mind) have proved fruitless.

In one sense alone does there seem to be a relation between the price of gas to the producer and exploratory activity as it might be measured by expenditures. If the oil companies have more money, they

[7] In the matter of Continental Oil Co., *et al.*, Examiner's Decision, 17 FPC 563,570, 1957.

may tend to do more exploring; and if they spend more, they will probably discover more gas, although, again, the relation between expenditures and discoveries is not linear. Yet there are so many factors helping to determine the level and location of exploratory activity that it is extremely doubtful whether any practically conceivable change in the field price of gas could result in any faintly predictable corresponding change in its long-run supply. Among these offsetting factors are: the controlled output of crude, the restrictions on imports, and, for the large integrated companies, the pressures to maintain the flow of product to an expanding refining and marketing department. Attractions of foreign exploration may also limit the stimulus of any possible domestic rise in the price of gas on domestic exploratory activity. Finally, the "lure of the big strike" will continue, as it has in the past, to weigh more heavily than changes in price, particularly with independent wildcatters.

It has not been unusual for state or federal bodies to intervene in other markets plagued by extreme inelasticity of either supply or demand. When milk sold for a cent a quart at the farm in the thirties, the case for minimum price fixing did not depend upon collusion among the dairy companies. Nor would it have been seriously urged either that the only economic problem was that of windfall income to the milk consumer, or that the low price for milk would encourage desirable industrial uses for the nonfat solids in milk. The truth is that we accept regulation—to set either a floor or a ceiling—where inelasticities and the resulting possibility of windfall income or loss to producers pass the limits of political tolerance. More important to the economist is the fact that such intervention hardly ever produces the objectionable distortion of resource use that, according to pure welfare economics, should result.[8] Reduced to its simplest terms, the issue is whether Mr. Getty shall buy a yacht (or a Jackson Pollock) or whether thousands of New Jersey commuters shall enjoy an extra evening "on the town" in Manhattan once a year. Of course, to the extent the consumer-commuters are stockholders in Tidewater Oil Company or Mr. Getty subsidizes off-Broadway productions the outcome may be hopelessly indeterminate.

True, given the present highly unequal distribution of stock ownership as compared with the distribution of consumption of natural gas, the proper procedure as the welfare economist sees the problem is to tax the unearned increment, while leaving price uncontrolled.[9] But this

[8] See J. K. Galbraith, "Economic Preconceptions and the Farm Policy," *A.E.R.*, 1954, pp. 40-52.

[9] H. G. Brown, "The Prospector and Economic Rent," *Amer. J. of Econ. and Soc.*, 1953, p. 301.

solution is not presently feasible for political reasons. The choice that faces us is between an unregulated price, accompanied by unearned increment and maldistribution of income, and a controlled price with somewhat improved income distribution.

A plea for decontrol that has been strongly urged by the oil industry is that only thus can we obtain an adequate supply of gas. If the price of gas actually does not influence exploratory activity, this argument falls without further demonstration. But it is usually so buttressed by generalizations about the decline in the ratio of finding to production and increases in drilling costs that it warrants brief review before examining the workability of regulation.[10]

Examination of the actual details of trends brightens the black picture entered by the industry and accepted by the Administration. It is true that the proportion of exploratory to total wells drilled is higher than in the past. But there is nothing to show that the proportion of dry holes to exploratory wells has risen; it has, on the contrary, over the postwar years remained remarkably constant.

Because wells have been drilled somewhat deeper, from year to year, the cost per well and the cost per foot have risen. Yet when adjustments are made for changes in prices of drilling labor, etc., it appears that real costs actually declined from 1950 to 1955.[11] It is also argued that the barrels of oil discovered, and the M c.f. of gas found, per well and per foot drilled, have declined. But when drilling costs or finding and development costs are compared with the value of oil, or of oil and gas, added to reserves, there appears to be little change in the past eleven years. The average drilling cost per dollar of oil and gas added to supply was $0.22 in 1946 and $0.27 in 1956.[12] In pointing to high costs of offshore drilling, the oil industry forgets the extraordinary success ratio and volumes of oil and gas discovered there. And it is offshore that the sharpest recent gas price increases have occurred.

The continued fall in what is usually referred to as the reserve life index has been hoisted as a scarecrow to support a claim for a market-determined field price. For instance, it is urged that we have to discover at least 1.5 times the rate of consumption of natural gas to perpetuate our current rate of growth of consumption. There is, of course, no magical relationship between current production and discovery rates. As long as we discover what we use up, there would

[10] See "The White House: Report on Energy Supplies and Resources Policy" (mimeographed release, Feb. 26, 1955), p. 2, and *Budget Message of the President to the Congress for the Fiscal Year 1958* (1957), p. M-20.

[11] See, e.g., Ragland, "Effect of Modern Technology on Well Cost," *Petroleum Engineer*, Jan., 1957, pp. 33-36.

[12] Exhibit 390, Schedule 15, Testimony of Alfred E. Kahn, In the Matter of Phillips Petroleum Company Docket G-1148, *et al.*, 1957.

seem to be no danger of running out of gas. And since the current finding rate is well in excess of double the consumption rate, as compared with 1.0 to 1.5 in the case of oil, there seems to be no immediate cause of worry—even if the 1.5 ratio is the Plimsoll's line the industry seems to believe.

The crucial question then becomes one of cost allocation: What proportion of the aggregate expenditure, including exploratory cost, should be paid by gas consumers, when the process is truly a joint one?

II. *Cost of Service Regulation*

Justice Jackson's dissent in the Hope and concurring opinion in the Colorado Interstate cases raised a number of questions about the desirability of applying the cost-of-service principle to natural gas pricing in the field. He found use of the rate base approach fantastic; it led to delirious results.[13]

Does the cost-of-service approach, including allowance of a fair return on a rate base, actually present the difficulties that Jackson feared? In the first place, since the Commission did apply it for a decade or more to the pipeline companies, which continued during this period to maintain reserves and production, the results may have been "delirious," insofar as they were concerned, but they did not connote disease. An extension of the principle to all gas producers, however, does bring to the fore the problem of different prices for indistinguishable M c.f. of product. It also raises questions where oil companies are gas producers, not only of cost allocation between gas and oil, but of field versus company pricing.

Cost-of-service type of regulation could involve a waste of administrative resources if it required cost finding for each of the thousands of independent producers instead of the few who produce the great bulk of the gas. One suggestion has been that the Natural Gas Act should be amended to relieve from the cost-of-service accounting and reporting requirements all producers selling less than 2 billion cubic feet in interstate commerce. Such an amendment would immediately exempt all but roughly 200 producers, currently responsible for about 90 per cent of interstate sales, from what are admittedly burdensome regulatory costs.

Determining cost of natural gas production for a typical oil company requires finding and averaging costs in dry gas, casinghead, and condensate fields. Admittedly costs are different for each type of well, yet even conventional regulation, by analogy with electric current generated by equipment of varying ages and efficiency, would not require

[13] *FPC* v. *Hope Natural Gas Co.*, 320 U. S. 581, 1944; *Colorado Interstate Gas Co.* v. *FPC*, 324 U. S. 581, 1945

pricing gas from each type of field, which is indistinguishable when sold to the pipeline, at different rates. Subsidiary allocation problems, involving assignment of indirect costs of leases from which both oil and gas are produced, can be solved on a reasonable basis. An average cost can be derived which, while it may be less than the total cost of dry gas, will exceed the separable cost of production of casinghead gas.

Division of exploratory expenditures between gas and oil is the most difficult problem of cost allocation and the most important, since this is the largest single component of joint cost, given the familiar accounting procedure in the industry of directly charging the major proportion of exploratory expenditure against current revenue. Is there a reasonable technique for such an allocation? According to spokesmen for the oil companies they are, even at present prices, looking for oil, not gas. In an isolated location, there is not much more point to finding gas than water. If gas is really a by-product of oil production, perhaps no exploration costs should be assigned to it. It is true that, when oil is found not in association with gas, gas has to be injected to achieve efficient production; so in this sense, oil companies look for gas when they look for oil—but in order to increase oil recovery. It may be argued, therefore, that they are amply rewarded for the gas in their increased recovery and reduced costs of oil. However, to insist that no exploratory costs be chargeable to gas would be both unrealistic, especially since there are "gassy" areas where new pool or horizon exploratory work will stand a good chance of bringing in gas, and probably, also, unreasonably discriminatory against oil buyers. Any tentative method of allocation of exploratory costs to gas can be checked by determining whether the current price of oil covers its assigned costs.

While it is hard to find a flawless method for allocating exploration expense, there are several reasonably satisfactory methods.[14] On the assumption that exploration is carried on to make good deficiencies in reserves, expenditures could be divided in the same ratio as book—not statutory—depletion, or relative revenues from current sales could determine the breakdown on the assumption that exploration is to replace current sources of revenue in their present proportions. Another possible measure is the relative value of additions to reserves during some period, on the assumption that the pattern of reserves obtained more nearly than any other indicates what it was that stimulated exploratory effort.

The rate of return to be allowed on the natural gas investment could be determined by what has been earned on company book in-

[14] Testimony of Alfred E. Kahn before the FPC in Tidewater Oil Company, FPC Docket G-9932; Testimony of Benjamin Caplan before the FPC in Phillips Petroleum Company, FPC Docket G-1148.

vestment in past years, modified to allow for the fact that, compared with oil, the natural gas segment of the business will be somewhat less risky, due to its public utility status. The riskiness of the oil business itself appears to have been much exaggerated. Surveys of price behavior of new and outstanding issues of oil production companies disclose that investors, probably because of opportunity for capital gains and the built-in tax favors, capitalize the earnings of such companies at relatively low rates. And as Professor Nelson has pointed out in another connection, the familiar contentions about the riskiness of major oil company investment fail to take into account the techniques that have been developed for sharing and spreading risks.[15]

The majority of the FPC in the Panhandle case held that cost of service should include not merely book depletion but the tax a producer would pay were it not able to claim percentage depletion and intangible development costs as deductions. In spite of the reversal of the Panhandle opinion on other grounds, the issue is still alive. There seems to be no good reason to include taxes not paid as a cost of service. To the extent that there is competition in the oil sector of the petroleum industry, the price of crude and its products should in the long run cover actual costs, not statutory deductions.

If the average cost of service has once been determined on a single company basis, it can be used to adjust area rates to pipelines, either up or down, on an across-the-board or percentage basis or to equalize rates, whichever seems the most desirable policy. This latter policy would encourage exploration in less costly areas. Another possible bridge between the average cost of service and actual rates might involve a move in each area to a modal figure, with an elimination of "out of line" rates.

Would cost-of-service pricing penalize the "more astute, fortunate, and efficient" producer?[16] Even if rates were set entirely on a company-by-company basis, it is hard to see exactly why such a producer would be penalized any more than efficient producers of electric service are now penalized by state regulatory commissions. While a guarantee of a compensatory return will always reduce to some extent the premium on efficiency, it seems likely that FPC might effectively check any tendency to waste money on exploration or development by adopting some area price base. This could provide for sufficient flexibility in application to leave an adequate incentive to efficiency while at the same time checking the addition of needless unproductive exploration costs to a

[15] Joint Committee on the Economic Report, *Federal Tax Policy for Economic Growth and Stability*, 84th Cong., 1st Sess., 1955, pp. 471-472.
[16] Lindahl, *op. cit.*, p. 538.

company's rate base. As a practical matter, the natural gas producer who is consistently improvident, or "unlucky," would have very little gas to sell, and it seems unlikely that pipelines would be anxious to buy from him. The producer's certificate does not guarantee him customers. Yet, under the present contracts, prices have been drastically increased without the excuse of higher costs. Pipelines might tend to favor the efficient and neglect the inefficient explorers to a degree now impractical because prices do not now reflect efficiency.

Under regulation it has been alleged gas would have continually declining values, because the rate base would diminish with the depletion of the supply.[17] While the rate base would fall if it were derived solely from the original investment in a single pool, there is no reason to believe that this would transpire either for any given firm or for the industry as a whole.

What would be the effect on consumption of a shift to conventional cost-of-service pricing? How would price control affect the consumption of natural gas as between so-called "low-grade" and superior uses and between present and future? This brings us to the third and most puzzling of natural gas problem areas: conservation.

III. *Should Natural Gas Be Conserved, and If So, How?*

There is only a limited amount of natural gas; most of it still undiscovered will probably be found in association either with oil or with liquids in the form of condensate. Recent estimates of domestic supplies are based on the expected petroleum content of the estimated volume of sedimentary rock underlying the continental United States area. These projections are wholly unrelated to current proved reserves and take into account the possibility that as yet untested sedimentary horizons may yet prove oil-bearing. Probable gas reserves are forecast on the basis of a rise in current ratios of new gas to oil discoveries. Top estimates of the volume of natural gas yet to be found are in the neighborhood of 1,200 trillion cubic feet—a figure which can be put in perspective against current annual consumption of about 11 trillion cubic feet and probable 1965 consumption, assuming a reduction in the rate of growth of consumption, of 16 trillion cubic feet.

It has been strongly urged that if the field price is allowed to seek its "natural" level, there will be less danger that our limited gas supply will be wasted in "inferior" uses. The "free" market, according to this view, will ration gas to better advantage than a cost-based price which would lead, first, to an unsatisfied demand by pipelines and distributors, and second to sales of interruptible gas to industrials at prices below

[17] Lindahl, *op. cit.*, pp. 537-538.

the free market value of the gas. There is some merit to this argument.[18] On the other hand, the FPC has been criticized because its present policy in effect overprices industrial gas by relieving residential customers of capacity costs properly chargeable to them if price is to be based on long-run marginal cost.[19]

However, there are signs that, at present average price levels—which it is unlikely that regulation would reduce—natural gas is being increasingly devoted to the "superior" uses. The proportion of stored gas is rising, and industrial sales are falling as a per cent of net marketed production. The most obvious forms of waste appear to have been largely eliminated, either by state conservation laws or because—as in the case of carbon black manufacture—field prices are high enough to make all but the most efficient production unprofitable.

A second problem of conservation economics concerns the impact of a regulated field price on the rate of exhaustion of the limited amount of gas made available by nature. This issue is sometimes resolved by assuming that the social rate of discount to be applied to the future output of an exhaustible resource is lower than that of individual firms. The application of this lower rate will result in maximizing the social value of output by stretching it over a longer consumption period than would the decisions of private enterprise. If conservation is accomplished solely through price, this would entail higher prices for natural gas than would be set by an uncontrolled market and, a fortiori, higher than cost-plus prices. But such a limitation on consumption seems less desirable if substitutes for natural gas are on the horizon and their costs can be estimated with some accuracy by regulatory authorities. A higher discount rate would apply to future output than would be applied by private firms. As a matter of fact, although close substitutes for natural gas are not immediately available, the prospects in the next generation for obtaining large quantities of gas from the production and refining of shale oil, transport from foreign oil fields, and underground gassification seem rather bright. There may reasonably be anticipated increased efficiency in the use of the heat pump and solar energy for domestic heating. It seems unlikely, therefore, that a cost-of-service price will result in an unduly rapid use of our gas supply.

There are more immediate reasons for doubting that gas will be overproduced. As a larger and larger proportion is produced in associa-

[18] For a persuasive statement, see H. T. Koplin, "Conservation and Regulation: The Natural Gas Allocation Policy of the Federal Power Commission," *Yale Law J.*, 1955, pp. 855-860.

[19] R. K. Davidson, "Capacity Costs in Electric and Gas Utilities," *Land Econ.*, 1956, p. 354.

tion with oil, the supply of gas will be determined by oil conservation policies, which in recent years have restricted actual output to a continually diminishing proportion of potential output.[20] Residue gas from condensate fields will be produced at a rate which, like that of associated gas, is primarily determined by the need to maintain the price of crude oil and natural gas liquids. There will be little scope remaining, therefore, for the manipulation of price to change the time pattern of consumption of natural gas, except perhaps in the dry gas fields. Even there, in most fields, prorationing to pipeline demand applies.[21]

Even if a re-examination of energy supply showed that optimism about the future availability of and substitutes for natural gas were unfounded, it might be more desirable to enforce a limited use by certificating policy than to allow uncontrolled bidding by pipelines to skyrocket the field price.[22]

[20] *Second Report of the Attorney General Pursuant to Section 2 of the Joint Resolution of July 28, 1955*, 1957, pp. 86-87.

[21] See Erich W. Zimmermann, *Conservation in the Production of Petroleum* (1957), pp. 252-258.

[22] See W. H. Connole, "Energy—Its Use and Abuse," *Pub. Util. Fortnightly*, Nov. 21, 1957, pp. 836-845.

PRICES, COSTS, AND CONSERVATION IN PETROLEUM*

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I

You are doubtless all familiar with the philosophical problem: The bugler wakes the troops, but who wakes the bugler? In the American economy, the oil industry probably furnishes the best example of this problem. State commissions control the output, but who controls the commissions?

This question cannot be answered by pointing out that General Ernest O. Thompson is commander of the Texas National Guard as well as a member of the Texas Railroad Commission. This approach has created a confusion between "National Guard" and "guarding the nation." Nor can the resultant problems be solved by speeches from members of the American Economic Association. What we can do is to bring the vocabulary and the reasoning processes of the oil industry back within the orbit of what we consider to be economics.

As examples of the semantic problem, take two familiar terms: "freely competitive" and "supply and demand." Here is how they are used among oil regulators. According to the Governor of Kansas, in 1953:

> . . . The price of crude oil has been and is determined in a freely competitive market. . . . The price of natural gas is also determined in a freely competitive market. Kansas and certain other states have enacted minimum gas price laws in certain fields to reduce or prevent waste and to eliminate certain inequities. . . .[1]

Just as "a freely competitive market" for natural gas is defined to include price floors, so a "freely competitive market" for oil is defined to include output controls on the basis of technical considerations or market demand, whichever is lower. The term, in fact, appears to be compatible with any form of market organization which does not involve federal control of the domestic industry. Even inventors of new languages apparently have to draw the line somewhere.

But this light-hearted approach to the language also appears in regulatory treatment of the most sacred phrase of all: supply and demand. "Supply" means the amount of crude oil above the ground, or what anyone else would call "stocks" or "raw materials inventory."

* The writer has been greatly assisted by comments from the Chairman and from Professor Kermit Gordon, of Williams College. They are not, of course, responsible for the results.

[1] *Stockpile and Accessibility of Strategic and Critical Materials to the United States in Time of War,* Hearings before the Special Subcommittee on Materials and Fuels Economics of the Committee on Interior and Insular Affairs (U. S. Senate, 83rd Cong., 1st and 2nd Sess., Part 6), p. 1170.

"Demand" means the fixed amounts of various oil products that consumers will buy, regardless of price. Once we concede these two definitions, then we must agree with state commission claims that their manipulation of supply does not affect price. As they define these terms, supply and demand not only cannot determine price, they cannot determine anything else. They cannot even be placed on the same two-dimensional diagram.

As for "conservation," in 1953 the Director of the Conservation Department of the state of Indiana testified:

> We feel the more holes we can get punched down the better off we are in the State of Indiana. . . .[2]

These examples are offered as advance proof that there is work to be done. The curious vocabulary is a result as well as a cause of some extremely odd policies. This paper will approach this interaction of theory and policy in three stages: (1) oil and national security; (2) the civilian economics of oil; (3) some possibilities for future national oil policy.

II

To paraphrase Dr. Johnson, defense arguments are the last refuge of the syndicalist. But national security is a growing problem. Therefore the relationship of petroleum to defense will be examined before any comments are made on the civilian economics of the industry. Here the most logical split is between possible global holocausts and brushfire wars.

To begin with the latter, if we assume that the greatest danger of loss to the free world is in the area with by far the largest proved oil reserves—the Middle East—and that the danger here could become a reality at any moment, then the wisest policies would seem to be: (1) encourage shipments of oil out of the Middle East, as fast as possible, to all free world destinations; (2) discourage further exploration and development in the Middle East; (3) build up the maximum stock pile, in the United States and elsewhere in the free world, either above the ground or below it; (4) stimulate the expansion of transportation facilities, especially tanker fleets; (5) have at least enough refinery capacity to handle the potential supply of crude oil; and (6) encourage exploration in parts of the free world other than the Middle East and the United States.

Some of these recommendations apply also to the danger of global war. The more specialized ones will be examined first.

As to encouragement of exports from the Middle East, the United States has recently introduced "voluntary" quotas equipped with ar-

[2] *Ibid.*, p. 171.

rangements for formal appeals. The U.S. contribution to discouraging further exploration and development of oil in the Middle East is to grant companies operating in the area the same 27½ per cent depletion allowance for income tax purposes which has often been praised as the greatest possible encouragement to exploration and development within the United States. As for aboveground stock-piling, U.S. stocks of crude oil in recent years have scarcely been above the prewar level, even though refinery runs have grown from about 50 per cent above prewar a decade ago to about 150 per cent above prewar in the last year or two. Nor did the European stock-pile position appear any more comfortable during the Suez crisis. Tankers, after enjoying a bonanza during the Suez difficulties, are now being tied up. Among all the brushfire measures listed, only exploration outside the Middle East is being actively pursued, and even this activity cannot expand indefinitely without better marketing prospects. In terms of extra supply to the U.S. market from new foreign oil fields, these prospects appear to be nil.

Other brushfire wars would present no more long-run crude oil supply problems than a year or two of pleasant summer Sundays and cold, windy winters. One thing seems certain: If Middle East supplies remain available, crude oil supply would be one of the least likely bottlenecks.

If oil is a special sinew of war, then tax revenues are a more general one. Here the brushfire concept brings in the ability and benefit theories of taxation. As a country, the United States doubtless gains from the importance of American oil companies—as compared with Panamanian and Liberian oil companies—in the Middle East. But the companies themselves surely derive at least some benefit from the prospect of U.S. military protection, as distinct from Panamanian or Liberian military protection, in their area of operations. Senatorial investigation early in 1957 brought out that one American-owned oil company, Arabian-American, had net earnings in 1956 of 280.8 million dollars after taxes. These earnings were on an investment of 471 million dollars, of which 225 million consisted of "cash, accounts receivable, and so forth." The Company paid U.S. income taxes of $282,000, on income from securities it owned in the United States.[3] Thus the Company earned 60 per cent on its total assets, or 114 per cent on this total less liquid assets, and paid U.S. income taxes amounting to one-tenth of 1 per cent of its after-tax profits. As the Company's dividends passed through corporate hands—and possibly individual hands as well—in this country, substantial tax revenues must eventually have been collected. But, at the first stage, a company with superlative ability to

[3] *Emergency Oil Lift Program and Related Oil Problems*, Joint Hearings before Subcommittee of the Committee on the Judiciary and Committee on Interior and Insular Affairs (U. S. Senate, 85th Cong., 1st Sess., Pursuant to S. R. 57, Part 1), p. 239.

pay was in effect not required to pay anything. One must sympathize with Middle Eastern rulers. Many of them have large families to support. But it is only fair to ask how many brushfire wars the United States can afford to prepare for if the people who make such a good living from the sale of the brush do so little to help.

Now for some words about planning for a real catastrophe. Short-, medium-, and long-run analysis may seem a pedestrian way to classify estimates of the distance to the edge of the cliff. But conclusions for oil policy with respect to the domestic industry are quite different depending on the estimated period of future danger.

First, an immediate world emergency would require maximum stress on imports, and probably put petroleum exploration and development activities far down the list of priorities. Crude oil can be produced for a considerable period of time with very little new investment.

Second, maximum anticipated danger in the middle distance—say ten years hence—would shift the emphasis toward maintaining at least a minimum industry in being in this country. Since exploration, including exploratory drilling, both adds to reserves directly and indirectly maintains that part of the industry with the longest "lead" time, preparation for an assumed medium-run danger would require incentives for exploration relative to development and a fortiori relative to current production.

Third, as a matter of long-run analysis, use of American oil now clearly means a reduction in the supply of American oil at some time in the future, barring the exceptional case of total loss if some "stripper" wells are closed down. National security protection for the far future, then, would involve a subsidy for imports or a special tax on domestic production to protect the long-run national reserve position.

Thus, if we talk about crude oil only and are equally worried about all three time spans, we must favor contradictory policies. But a defense policy for crude oil makes no sense all by itself. The problem also involves oil demand; it involves oil transportation; it involves oil refineries; it involves all the factors bearing on supply of and demand for coal and steel and so on down and across the input-output table. More generally, it involves proper allocation of capital investment and protection of the tax base.

This list could be greatly extended. But this would simply take us farther into the problem and farther away from the supposed solution we now have. This has three aspects: crude oil, the Texas Railroad Commission, and price. General Thompson, of the Texas Railroad Commission, clearly set forth the relationships of these aspects in testimony before the House Committee on Interstate and Foreign Commerce in 1953:

The Chairman (Representative Wolverton of New Jersey): How do you determine a proper allowable for a well? . . . You told us when the well was brought in, that then you made a measurement. . . . And you determined what that well could properly produce under the best of engineering skill and laws. . . . Is that the amount that you allow when you issue an allowable?

Mr. Thompson: Never to exceed that.

Chairman: But you put it underneath it; do you not?

Mr. Thompson: Sometimes, if that is greater than the market demand.

Chairman: . . . that kind of practice, if it has the effect of increasing price to the consumer, is it right?

Mr. Thompson: Yes, sir; it is.

Chairman: On what basis?

Mr. Thompson: Because you cannot ever build up a reserve supply for defense of this country unless you have some incentive to build up this reserve, and it must be carried in the price of the product. . . .

The Chairman: Do you not think if that was necessary from a national-defense standpoint, it ought to be the subject matter of a statute by the Federal Congress, determining that policy? . . .

Mr. Thompson: No; because that is a State matter. The oil belongs to the State, not the Federal Government.[4]

As Chairman Wolverton brought out in further questioning, the Thompson doctrine has far-reaching political and even Constitutional implications. But the defense and economic aspects of the Thompson doctrine will repay more careful examination:

1. Unproduced oil is underground; the users are not and apparently will not be as long as they remain users. The supply of oil is much safer than the demand.

2. Even if customers are still alive and well, they may need fewer petroleum products in an emergency. Up to a point, rationing has been endorsed by General Thompson himself in testimony before the House Interstate Commerce Committee in 1957:

Representative Younger, of California: In your opinion, would not a reasonable rationing program for gasoline conserve at least 8 percent of our consumption without creating a crisis among the users of gasoline in this country?

General Thompson: Beyond question.[5]

One of the greatest emergency advantages of the United States is precisely the lavish level of consumption in normal times which may be reduced to divert output to military uses.

3. Several heavily populated areas in the United States depend on tankers for their oil supply. This is true, for example, of the largest concentration of population in the country, north of the Potomac and east of the Alleghenies. The tanker haul from Gulf ports to this region takes at least as long as the tanker haul from Venezuela. Although the Little Inch petroleum products line is being reconverted from natural gas, it does not extend all the way to the northeastern deficit area and is far too small to supply the area's minimum needs. Railroad tank cars

[4] *Petroleum Study (Gasoline and Oil Price Increases)*, Hearings before the Committee on Interstate and Foreign Commerce (House of Representatives, 83rd Cong., 1st Sess.), p. 656.

[5] *Petroleum Survey*, Hearings before the Committee on Interstate and Foreign Commerce (House of Representatives, 85th Cong., 1st Sess.), p. 238.

bore the main burden of northeast coast supply during World War II, but the railroads have recently called attention to their rolling-stock shortages by asking the government to set up a special lending agency to help them. Emergency tanker movements to the northeast would be at the expense of tanker needs elsewhere.

4. Few consumers of petroleum products have any direct use for crude oil as such. The refinery problem has been bluntly stated by the Chairman of the Standard Oil Company of Indiana, Mr. Robert E. Wilson:

> We have in our refineries almost the best target that the Russians could aim at with hydrogen bombs or atomic bombs. . . .[6]

At the end of 1956, unused refinery capacity in the United States was estimated at 733,000 barrels per day, or less than 9 per cent of average refinery output. This was the lowest ratio of unused capacity to average output since the end of World War II.[7] Even at the peak of the Suez crisis Texas production was cut back to fifteen days out of the twenty-eight in February. By summer, Texas production was on a thirteen-day basis; production in other states had been reduced; and by August 25, the *New York Times* carried an estimate that oil producing capacity in the United States was 10,150,000 barrels, or 3,350,000 barrels more than actual output.[8] This merely continued a trend which has been going on for ten years. In 1948, the Texas Railroad Commission allowed wells to produce on every day in the year. This allowable declined rapidly to 230 days in 1950, then rose to 278 in 1951, then fell again to 194 days in 1954 and 1955.[9] Excess producing capacity in the United States has consistently exceeded the level of imports. So, even if imports were cut off completely, refining capacity in the United States would be inadequate to process domestic production.

5. Industry spokesmen have urged that imports "supplement but not supplant" domestic production. On its face, this recommendation is economically meaningless. General Thompson has supplied a definition, however, which clears up the difficulty. He says that "it is perfectly all right for imports to supplement our supply; and by supplementing I mean we could favorably import products that cannot be economically made from our high gasoline-content crude."[10] In other words the Texas Railroad Commission has no objection to oil imports that compete with the coal industry. To maintain an "industry in being," the coal

[6] *WOC's and Government Advisory Groups,* Hearing before the Antitrust Subcommittee of the Committee on the Judiciary (House of Representatives, 84th Cong., 2nd Sess., Part IV, Serial No. 12), p. 2641.
[7] *Petroleum Survey,* p. 8.
[8] *New York Times,* Aug. 25, 1957, Sec. 3, p. 7.
[9] *Emergency Oil Lift Program,* Part 2, p. 969.
[10] *WOC's and Government Advisory Groups,* Part II, p. 1492.

industry requires far more labor than oil production, and world-wide experience suggests that inward mobility of coal miners is very low even in emergencies. In the national security interest, an import policy for oil must consider the domestic coal industry at least as seriously as it considers the domestic oil industry.

6. The increase in the excess domestic oil producing capacity seems also to be inconsistent with the recent trend away from military petroleum use both because of the shift to other fuels and because of budget reductions. We grant special tax treatment to the oil industry to stimulate development, supposedly for defense, and we also steadily cut down our military establishment, supposedly because tax yields are inadequate to support as much defense as we would like.

The lesson taught by the Articles of Confederation, by the states' rights difficulties of the Confederate States of America, and indeed by certain aspects of the history of the Lone Star Republic, is still as valid as ever: security planning by individual states cannot produce maximum security for the country as a whole. Security planning with respect to one natural resource merely increases the confusion.

Oil does present formidable security problems. The largest known reserves—and the cheapest production—are in the Middle East; the European NATO powers have a huge net oil deficit; preparation to move large quantities of oil to support military action anywhere in the world at any time would require enormous tanker capacities. But the activities of state regulatory bodies are and must be unrelated to these security problems.

III

To return to the peacetime economics of petroleum. It is tempting to focus this discussion on a single familiar line of reasoning. Petroleum is a "stock" and not a "flow" resource and it is not re-usable through secondary recovery. So it is a wasting asset in two senses. Assuming given technology and a known location for all petroleum reserves, the cost of a given output in any time period would then be an increasing function of the cumulative total of output up to that time period. This might be called an "increasing cost trend" to distinguish it from the familiar concept of "increasing costs" relative to increases in output during a given period of time. The demand curve for petroleum is shifting upward quite rapidly. Therefore, the argument concludes, we must take steps to shift as much petroleum supply as possible from the present into the future.

Well and good, if we are talking about a purely competitive industry in the very long run. But irrelevant or misleading if we are talking about the present oil industry over a reasonable period of time. Here are some reasons:

1. The greatest single change in the industry's cost structure has been the very low cost of petroleum discovered in the last two decades outside the United States, especially in the Middle East. Unless we restrict our inquiry to the United States, the increasing cost trend is somewhere off in the remote future.

2. Even in the United States, recent technical progress has been substantial. According to the president of the American Oil Well Drilling Contractors, contract drilling costs accounted for 58.5 per cent of total direct well costs in 1941 and rose only from $4.25 to $4.75 per foot of well drilled between 1941 and 1956. Drilling costs increase exponentially with depth, and average well depth increased from 3,056 feet in 1941 to 4,022 feet in 1956. So contract drilling costs for wells of comparable depth actually declined by 7 per cent between 1941 and 1956. The decline in this important cost category has held the increase in total drilling costs per foot, including all other outlays as well as contract drilling, to less than 90 per cent since 1941 in spite of the greater average depth per well.[11]

3. Crude oil prices in the major Gulf Coast-mid-continent producing areas have risen from just over a dollar a barrel prewar to over three dollars a barrel now. This price rise is much greater than the cost rise per foot of well drilled in the United States. So neither the greater average depth of wells in recent years nor the smaller amount of oil discovered per exploratory well tells us anything about what we have called the "increasing cost trend." The actual combination of rising prices and lagging costs per foot of well yields to more familiar analysis: if prices rise relative to the costs of drilling a given number of wells to a given depth, more and deeper wells are drilled until a new equilibrium is reached along a given medium-run supply curve. If this new price is reached and maintained at the expense of output controls on new wells, then the demand curve for the production of each well is a rectangle and the supply curve representing the industry's response to the higher price is steeper than the true supply curve. Both the true and the controlled medium-run supply curves would produce increases in average costs in response to higher prices if they slope upward at all. Therefore the arguments for higher oil prices on the grounds of diminishing returns are completely reversed: they overlook the fact that higher prices were themselves the original cause of the diminishing returns.

4. This error is related to a pair of more obvious ones, both advanced by the president of the Humble Oil Company in defense of the 1957 crude oil price increase. He pointed out that Humble's "total investment in unoperated leases has increased sharply in recent years

[11] *Emergency Oil Lift Program*, Part 2, p. 1377.

while the net amount of acreage under lease has remained relatively constant" and complained of the effect of a "large amount of reserve-producing capacity" in producing "a real burden upon petroleum producers in terms of higher investment and operating costs per barrel of production."[12] His lease argument need not be analyzed in detail, since it has already been demolished by David Ricardo. Higher economic rents are an obvious way of absorbing the prospects of surplus income created by previous price rises. The second argument—for higher prices to cover the higher unit overheads due to idle capacity which must be idle to keep the price as high as it is—comes straight from Lewis Carroll. These arguments are not only remote from the economics of conservation; they threaten the conservation of economics.

5. If there has been an increasing cost trend in the oil industry over the last fifteen years, it stems from a different source: the bonus for misallocation of resources provided by the present combination of high federal corporate and individual tax rates and special tax treatment of crude oil producers. A very wealthy individual who would be in the 91 per cent marginal tax bracket if he did not engage in oil wildcatting can finance, say, ten wells for a million dollars. Assume that nine of these are dry holes. They can be charged off immediately against income from all sources. Assume that the tenth produces $500,000 worth of oil, at operating costs of $100,000, over its entire life span. The individual can charge off roughly half the cost of this well, or $50,000, as "intangible costs" in the year the well is completed and recover percentage depletion at the rate of 27½ per cent on the $500,000 he receives from the sale of the oil. If the individual had not gone into the oil business, he would have had to pay the federal government $910,000 of his million, and he would have been allowed to keep only $90,000. As an oil wildcatter, he has to pay taxes of only $45,500 (91 per cent of $50,000) in the year he drills the wells, and he recovers $137,500 tax free over the life of his one producing well, plus 9 per cent of the remaining $262,500 for a total of $161,125. So a total present investment of one million dollars has produced a value of output of only $500,000 at some time in the future. The present discounted value of this output would of course be still less. Yet this extremely uneconomic use of resources from the economy's standpoint is a profitable opportunity for some individual if interest rates and other rates of return are low enough.

It is no wonder that percentage depletion has been hailed by oil wildcatters as the only way to maintain a healthy level of exploration for oil in the United States. Yet percentage depletion by itself may have little effect on domestic exploration:

[12] *Ibid.*, Part 1, pp. 772-773.

First, percentage depletion offers more incentive for development than for exploration. It provides tax-free income only if oil is produced. Anyone sensible enough to have an enormous income would not engage in wildcat drilling, where he runs the risk of losing his entire million dollars in order to save $910,000 in taxes, if he can engage in development drilling in known oil fields and reduce his risk to the vanishing point. This relative stimulus to development would have a depressing effect on exploration in a free market, because it would increase the ratio of production capacity to reserves and pull down the going price. In some states, present regulatory controls offset part of this development incentive either by acreage formulas or simply by cutting monthly allowable production far below possible production at maximum efficient rates. But these controls also penalize exploration by creating the prospect that oil discovered can be withdrawn only at a slower rate than economic and technical conditions would otherwise warrant. The result is a lower discounted present value for any given total future income from oil.

Second, the difference between tax rates on income and tax rates on capital gains provides another route to misallocation of resources which would still exist even if percentage depletion were abandoned. The successful wildcatter may reap his harvest in the form of capital gain and pay a maximum income tax rate of 25 per cent. For wildcatters in high-income brackets, this option is likely to be even more attractive than retention of the well in order to obtain percentage depletion. The buyer may then compute depletion on the basis of the cost to him. The option of percentage depletion may raise the buyer's offering price for the well, but this possibility involves a set of complicated assumptions about interest rates, degrees of uncertainty, ratios of future operating costs to future revenues, anticipated output control policy, and doubtless a long list of other variables. Independent wildcatters are supposed to account for about 75 per cent of all exploratory drilling, and 60 per cent of U.S. production is from wells owned by major integrated oil companies; so wildcatters must often use the capital gains route even now.

Third, U.S. corporations engaged in foreign oil production also deduct percentage depletion at the 27½ per cent rate before arriving at their income for tax purposes. Overseas operations involve problems quite beyond the scope of small independent wildcatters, and the most important foreign producing areas have been largely pre-empted by the major integrated companies. Therefore, the elimination of percentage depletion would presumably reduce the incentive for foreign drilling relative to the incentive for domestic drilling because of the practical absence of the capital gains alternative in foreign operations.

The preceding discussion should at least suggest that conservation objectives have become lost in a maze of conflicting regulations, designed to achieve other purposes, on the supply side of the crude oil market. It is still possible that the policies which have produced a 200 per cent rise in crude oil prices since World War II have conserved oil by reducing the quantity demanded—even though General Thompson and his colleagues have thrown away their one logical argument by insisting that the demand curve for crude oil is vertical.

On the demand side of the market, the timing of price increases is fundamental. Present conservation of a wasting resource may be necessary to avoid rapid future price increases. To shift the rapid price increase into the present is to agree with the thrifty pedestrian who replied to "Your money or your life" by saying, "Take my life; I want to save my money for my old age."

Moreover, price increases for petroleum products have not been as extreme as price increases for crude oil. Since the demand for crude oil is entirely derived from its use in various refined products, a demand case for conservation must restrict itself to the prices of the latter. The president of the Standard Oil Company of New Jersey defended the 1957 crude oil price increase with the remarkable argument that "our major refining and marketing affiliate, Esso Standard Oil Company, has experienced a decrease in its return on investment from 11.6 percent in 1950 to 5.9 percent in 1955. . . ."[13] He continued by pointing out, correctly, that a 5.9 per cent return is very low in relation to earnings in other major industries. It is also very low in relation to the combined earnings rate of 11.3 per cent on all of Jersey's domestic affiliates. So an important effect of the high price of U.S. crude has been either a reduction of margins elsewhere in the domestic industry or an increase in excess capacity. This has not been due to an increased percentage of idle refinery capacity. As we have seen, this percentage has decreased. The Suez crisis did not reveal any great surplus of tanker capacity. So we must conclude either that we propose to defend the free world with more and better U.S. filling stations or that margins in the industry between crude oil and final consumption have not held up; i.e., that the impact of high crude oil prices is blunted before it reaches final consumers.

To conclude this discussion of the peacetime economics of the oil industry: The crude oil producing industry in the United States has managed to work itself into a position which is almost indescribable in rational economic terms. Output is stimulated by high prices and by unusual features of the federal income tax laws; to compensate for this, domestic output is cut by state controls of production and for-

[13] *Ibid.*, Part 2, p. 1092.

eign output by so-called "voluntary" import quotas announced by the U.S. government. Drilling of wells is stimulated by prices and tax laws and restricted, if at all, by rules of thumb such as spacing requirements. Exploration is stimulated by prices and special tax arrangements and depressed by the existence of heavy excess capacity and output limitations. Public bodies, which are supposed in theory to be the proper guardians of conservation policy because they take long views, operate on a month-to-month basis which has produced an increasing surplus of oil producing capacity over output. "Equilibrium" in this industry might better be called "stalemate." Everything cancels out, except for prices paid by consumers, which are high, and the after-tax incomes of a group often referred to as "small independent oil men," some of which are among the highest in the world.

IV

Finding fault is easy. Can anything be done? If so, what?

1. The obvious political proposal does not seem very practical. This would be to allow a 27½ per cent depletion allowance on the incomes of all users of oil products, with the proviso that the gain in income after taxes must be contributed to the campaign fund of one or another candidate for public office. As more and more tax-free income becomes concentrated in the hands of one producer group, the danger of a vicious spiral from higher income to political support to special favors to still higher income is increasingly great. One way to approach a sensible economic consensus by at least presenting both sides would be to encourage the success of customers' candidates.

2. As for countervailing power, this seems blocked by the combined influences of vertical integration and special premiums awarded to crude oil prices and profits by federal tax law. To quote McLean and Haigh, "there are very few individuals or companies anywhere in the oil industry who are interested in seeing crude oil prices move downward in times of declining product prices."[14] Countervailing power would offer no sure protection even without federal import controls. As the chairman of the Gulf Oil Corporation has pointed out, "importing companies are mostly also domestic producers and have most of their stake in this country—they have no interest in bringing so much oil into this country as to flood it with oil and ruin the whole price structure. . . ."[15] In default of countervailing power, the only possibility is divergence of interest within companies that have important foreign

[14] John G. McLean and Robert William Haigh, *The Growth of Integrated Oil Companies* (Boston, 1954), p. 155.

[15] *Trade Agreements Extension Act of 1953*, Hearings before the Committee on Ways and Means (House of Representatives, 83rd Cong., 1st Sess., on H. R. 4292), pp. 1245-1246.

as well as domestic properties—a possible theory of internal combustion, but with no reliable source of ignition.

3. Our defense planning for oil seems based on inveigling our enemies into Texas and then drowning them in surplus oil. Variations in excess domestic oil-producing capacity bear no relationship to the ebb and flow of defense needs for oil or to excess capacities at other levels of the industry. If we are to support this excess, then let us include the cost in the national defense budget.

4. The domestic crude oil industry has always been one of the most inefficient in the whole economy and still is. The inefficiency goes beyond waste of oil to waste of manpower, steel, and capitai generally. This inefficiency was originally produced by a combination of private ownership of subsoil rights on the basis of surface ownership and the law of capture. As state controls began to alter this inefficiency—not always for the better—new pressure for waste developed as 27½ per cent depletion combined with ever higher tax rates to stimulate the production of holes in the ground. In its extreme application—to royalty owners—percentage depletion gives a special reward to a group which cannot possibly contribute anything to oil discovery, production, or anything else. If we are forced to give this group special tax treatment, then let us restrict percentage depletion to oil royalties from unitized fields only and provide that these fields must be unitized before drilling starts.

As to working interests in oil, percentage depletion allowances should be eliminated, capital gains treatment restricted to unitized properties, and expensing restricted to dry holes. Expensing of dry holes already provides superaccelerated amortization of most of the investment in wildcatting.

5. The import problem ties in with almost every aspect of the industry—prices, the proper relationships of excess capacity at various stages of the industry, conservation of the U.S. oil reserve, etc. Government-imposed voluntary quotas are about as sensible from the standpoint of long-range planning as the Texas Railroad Commission's month-by-month determination of allowables. If we can find any method of getting the price advantages of imported oil and simultaneously improving our security position, we should certainly use it.

This method may exist. The northeastern oil-deficit area has a surplus of exhausted oil fields, abandoned mines and other cavities in the earth which could or might be available for oil storage. Permission to import would automatically enlarge the total capacity of the tanker fleet—probably the most useful of all the industry's capital investments from the standpoint of national security needs. The necessity to move reserve oil from seaboard to interior storage areas would probably

require the construction of a large crude oil pipeline which does not now exist. Therefore, why not eliminate all import quotas, levy an import tariff in oil to be placed in a national security reserve, encourage importers to push forward with the program rapidly by permitting them to hold the reserve oil imported in bond, and use the mining industry's "sliding scale" principle by varying the reserve-oil import duty in direct ratio to changes in the ratio of actual to maximum efficient Texas production? If Texas and the other oil-producing states with market-demand statutes wish to provide our national security reserve by shutting down their oil wells, by all means let them do so. Imports of oil would then be completely free of all governmental restraint; i.e., the ratio of imported reserve oil to imports for consumption would be zero. If Texas and other states should choose to produce at maximum efficient rates, then the reserve-oil responsibility could be shifted toward imports; e.g., by raising the duty payable in reserve oil to perhaps one-half barrel per barrel entered for consumption. If this procedure nevertheless fails to maintain national oil reserves above the minimum required by national security, the federal government would have a responsibility to protect the country by purchasing domestic reserves and holding them off the market.

These suggestions are not presented as an optimum solution for the problems the oil industry has created for the economy and for itself. The suggestions are designed to underscore the following criteria for a sensible oil policy, which would operate to the greatest possible extent within the present framework of the industry: First, to achieve defense objectives overlooked or prejudiced by existing arrangements; second, to limit further depletion of the federal income tax base; third, to re-establish the principle that price should be a guide to the use of resources as well as a creator of incomes; and, finally, to encourage the industry to pursue rational conservation objectives in place of the present irrational objective of punching more holes in the ground.

DISCUSSION

LESLIE COOKENBOO, JR.: My remarks will be limited to Dr. Dirlam's paper. This paper is more directly concerned with the question of regulation of gas prices than with costs, conservation, and pricing in general. I shall, therefore, confine my comments to the regulatory aspect.

His views are in general accord with those expressed by Professor Kahn, his colleague at Boni, Watkins, in testifying for the eastern public utilities and regulatory commissions in the Tidewater and Phillips cases. I have found Dr. Dirlam's views interesting and stimulating—the more so because they are in general conflict with the conclusions reached by Professor Lindahl before these meetings two years ago, as well with conclusions reached subsequently by Professor McKie in his monograph and by Dr. Lovejoy and Professor Neuner in their respective doctoral dissertations at Wisconsin and Columbia. Last, and quite probably least, Dr. Dirlam's conclusions are in direct conflict with those in my own study of the field market for natural gas. The differences in views reflect very real differences both in the interpretation of certain basic principles of economics and in the recognition and assessment of certain vital facts about the market. I should like to discuss the differences which can be covered in the time available.

Dr. Dirlam tells us that the case for regulation of field prices of natural gas "rests as strongly upon inelasticities as it does upon the presence of monopoly elements." I deduce that he considers the industry's behavior to be inherently monopolistic regardless of its structure. Demand has increased rapidly. His position seems to be that as a result of this increase all sellers can mercilessly exploit buyers by taking advantage of their (alleged) knowledge that only very small amounts of uncommitted reserves and acreage are available to buyers at any time. In an earlier draft he put this more cogently when he said that in view of increasing demand and the persistent low volume of uncommitted reserves "even a small producer can see that his supply is strategic." In short, his position is that, regardless of the structure of the industry, any producer can demand the maximum price that pipelines can pass on to distributors.

Dr. Dirlam submits no factual justification for the statement that the volume of uncommitted reserves and acreage has always been small during the period of rapid increases in price and demand; and this might be rather difficult to do. Whatever may be the statistical validity of this premise, the proposition about the ability of a producer to exploit buyers when demand increases—regardless of the structure of the industry—raises an important question about the economic theory of price behavior in a competitive industry.

We should expect that in the short run there would be a capacity limitation on the ability of any competitive industry to produce more goods without new capital formation. Dr. Dirlam asserts this to have been the case for

natural gas in recent years, with the additional proviso that the industry was at or near capacity. Does such a situation mean that competition cannot be workable when demand is increasing? If it does, then we certainly need to engage in one of those "agonizing reappraisals" of the virtures of competition. Far more industries than gas production are involved.

I cannot bring myself to believe that a producer in any competitive industry will be able to exploit buyers, as would a monopolist, simply because demand is increasing (especially when the buying side of the market is considerably more concentrated than is the selling side, as is the case in the field market for gas). How does the producer know that buyers cannot go elsewhere if he asks a higher price than other sellers are asking? Even if he is quite sure that the existing excess capacity of the industry cannot satisfy the increase in demand, how can he be sure that capacity will not be expanded by other existing firms? And how can he be sure that no new firms will enter the market?

Only if it is a case of long-run fixed supply with no possibility of expansion beyond the current level of output can the producer in a competitive industry be certain that the existing industry capacity is safe from the potential competition of new capacity. Even in this remotely possible case, I am not convinced that a producer with, say, 7 per cent of capacity can exercise very much monopoly power. Furthermore, I am convinced that the structure of the natural gas producing industry is competitive and that it does not fit in the category of fixed supply.

First, let us examine the question of structure. In this industry (as measured by 1955 volumes of sales), the top four firms accounted for 20 per cent of new sales to interstate buyers in the period 1951-55, the period of rapidly rising prices; the largest seller had just under 7 per cent and the twenty largest had 53 per cent. The comparable numbers for one, four, and twenty sellers in the preceding five years were 9, 26, and 62 per cent—all higher. There was considerable movement among the leading firms. Only ten of the top twenty sellers in the period 1951-55 were among the top twenty sellers in the period 1946-50. Likewise, only three of the top eight in 1951-55 were in the top eight in 1946-50; and only one of the top four in 1951-55 was in the top four in 1946-50. In the second five years, total new sales increased by 17 per cent over the level of the first five years.

The concentration ratios are low. Concentration decreased while the total output increased sharply. And there has been plentiful entry and changing of positions among the leading sellers. This industry has a competitive structure.

What of "inelastic supply"? Dr. Dirlam tells us that "it is extremely doubtful whether any practically conceivable change in the price of gas could result in even a faintly predictable change in the long-run supply of gas." In other words, there is fixed supply, such that price increases will give no increase in the capacity to produce gas. This assertion must implicity assume that gas accounts for an insignificant part of total discoveries of oil and gas. Otherwise, it contradicts the economic theory of joint products, which tells us that what matters is the total revenue from all products versus the total cost of all products.

Does gas provide only an insignificant part of total discoveries? In the period 1952-56, new gross additions to gas reserves amounted to just over six thousand cubic feet (M c.f.) of gas for every barrel of crude oil. This means that in terms of energy content, new gross additions to gas reserves were actually greater than new gross additions to crude oil reserves. In terms of current values, with new gas prices averaging from 15 to 20 cents per M c.f. and oil at $3.00 per barrel, the new gas is worth about one-third the value of the new oil. More important, in the states of Texas, Louisiana, New Mexico, and Kansas, which accounted for 83 per cent of new gross additions to gas reserves in the period, the corresponding ratio of new reserves of gas to oil was 9 to 1. In these states new gas was, therefore, worth about half as much as new crude. Even the ratio of 9 to 1 is deceptively low because it covers some areas in Texas where gas is much less important. In southwest Texas the ratio is 12 to 1; and in New Mexico it is well over 20 to 1. Note that in the country as a whole two-thirds of these gross additions to gas reserves were not associated with crude oil; and in the important gas producing states three-fourths of the new gas was nonassociated. Note, also, that these value relationships cover only revenues, not the margin over costs directly attributable to the two products, especially the lifting costs. Since the lifting costs of gas are now probably a smaller fraction of revenues from new sales than are the lifting costs of oil, the contribution of gas to over-all profits is doubtless even more important than is indicated by a comparison of revenues from the two products.

Gas is an important joint product, particularly in the area where most gas is found. Hence its price must influence the total exploratory effort to considerably more than a negligible degree. Furthermore, proportions of oil and gas can be varied by emphasizing drilling in gas or oil areas. There is evidence that such variations have occurred since the price increases began in 1951-52. From 1952 to 1956, a period of rather stable crude oil prices, gross additions to crude oil reserves were actually less than in the preceding five years. On the other hand, gross additions to gas reserves were up 40 per cent as the price of gas increased. In gas areas, the change is even more pronounced, particularly for gas reserves not associated with crude oil (two-thirds of total). In addition, exploration near gas fields accounted for 18 per cent of successful exploratory wells near existing fields in 1951 and for 28 per cent in 1955—a clear case of increased drilling for gas in a period of stable oil prices and rising gas prices.

Gas, then, provides a substantial fraction of the total value of discoveries. New additions to gas reserves have increased since the price increase of 1951-52, while new additions to oil reserves have declined. And there has been increased exploration around gas fields relative to that around oil fields. This is not a case of fixed supply.

Dr. Dirlam is also concerned about "inelastic demand" (in some undefined sense of that much-abused term). He contends that we have in the past accepted both maximum and minimum price regulation in cases of inelastic demand where "inelasticities pass the limits of political tolerance." Furthermore, he asserts, "such intervention hardly ever produces the objectionable

distortion of resource use that, according to pure welfare economics, should result." Evidence of this lack of distortion is the case of agriculture. Quite frankly, I have always accepted as correct the notion that our agricultural surpluses were dramatic examples of the distortion that results from maintenance of price above levels that the free market would bring. I have also never before considered the regulation of milk and other farm prices to be the result simply of inelasticity of demand. While the demand for milk may be inelastic in some sense of that term, I should have said that the purpose of minimum price regulation in this instance was to protect the profits of milk producers, be demand elastic or inelastic.

In evaluating the applicability of this argument to the question at hand, I should remind you first that, regardless of the industry, the law of supply and demand can work quite as well with a vertical demand curve as with a negatively sloped one. Furthermore, in this market, as Dr. Dirlam said in an earlier draft, there is a rather high elasticity of demand for the industrial segment and a low elasticity for the household segment. The industrial segment takes about 75 per cent of total consumption; hence one wonders whether over-all demand is actually quite inelastic, however the term may be used. (Professor Nelson questions whether oil has a vertical demand curve.)

In summary, Dr. Dirlam's case against the workability of competition is that there is monopoly, fortified by inelastic supply and demand. Actually, there is low concentration, entry, changing of position among the leading firms, increasing output, responsiveness of exploration to price changes, and responsiveness of consumption to price changes at least in the major industrial segment of the ultimate market for natural gas. Under such conditions I can only conclude with Professor McKie that "if any gas producer should attempt to hold out for a higher price than the other producers, he will simply lose his market." Indeed, the only significant possible interference with competition that I have found in this market has been the minimum price laws in Kansas and Oklahoma, to the extent that these laws may have operated; and I believe that these laws have been held to be unconstitutional.

There are a number of factual questions raised by Dr. Dirlam's paper which time limitations prevent me from discussing. One of these is that short-run supply is controlled by state oil production controls; but only one-third of gas production comes from oil wells, and gas wells are not controlled to any significant degree. There are instances of oil and gas dry holes, classified as such. His statement that we need find only as much gas as we use ignores the acceleration principle as applied to inventories (the Federal Power Commission presently requires a twenty-year supply for interstate lines). He accepts the questionable proposition that pipelines do not bargain with vigor.

While I cannot expand on these factual errors, I should like to make one comment on the form of regulation suggested by Dr. Dirlam. He advocates a combination of area pricing and company costs as the basis for regulation. Since costs vary among companies, it is not entirely clear to me how once "the cost of service has been determined on a single company basis, it can be used to adjust area rates" so that an "area price base" will be created. Perhaps this could be done by the use of industry average costs. In any event, alloca-

tion would be required; and as Dr. Dirlam points out, the cost of exploration is the most important item.

He suggests that there are several reasonably satisfactory methods. One is "relative revenues from current sales." The economic irrationality of setting the prices of joint products on the basis of relative revenues has been demonstrated so frequently that I need not dwell on it here. In spite of the economic irrationality, let us assume *arguendo* that sales realization might represent a method of allocation considered equitable for regulatory purposes. Another suggestion is the relative value of additions to reserves during some period. Let us make the same *arguendo* assumption for this method and see where all this leads us.

In 1955-56, the most common test years in current producer rate cases, the average value of oil at the wellhead was $2.78 per barrel, while the average value of all gas was 10.7 cents per M c.f. Production of oil (including condensate) averaged 2.55 billion barrels per year, while production of gas averaged 9.74 billion M c.f. This means that 12 per cent of total revenue was attributable to gas on a current realization basis. The 1954 *Census of Mineral Industries* showed 13 per cent of revenue for gas.

In the same period, gross additions to oil and condensate reserves were 7.17 billion barrels, while gross additions to gas reserves were 46.87 billion M c.f. If a conservative estimate of the value of these additions is the current price, we might value them at $3.00 per barrel for oil and 15-20 cents per M c.f. for gas. If the average price of new gas were 17 cents, 27 per cent of the total value of new reserves would be attributable to gas. If it were 15 cents, 25 per cent of total would be attributable to gas.

These two systems considered "reasonable," then, give allocations of about 12-13 or 25-27 per cent to gas—a difference of about 100 per cent. The industry is currently spending about 2 billion dollars per year on exploration. If 12-13 per cent of this were allocated to gas, gas consumers would pay 250 million dollars annually as their equitable share under cost regulation. If the other reasonable estimate of 25-27 per cent were chosen, these consumers would pay at least 500 million dollars. Can we in clear conscience say that a regulatory system which considers a differential of this magnitude to be reasonable is actually just and reasonable?

JOHN W. BOATWRIGHT: Professor Dirlam considers whether or not the field price of natural gas should be regulated and concludes that it should be. Then he considers the standards that should be applied and concludes that it should be based on costs. As I interpret the third portion of his paper he is not too concerned about the conservation of natural gas because of the bright outlook for substitute fuels. Let us consider his reasoning on each of these topics.

Regulation is desirable, he contends, because the demand for, and the supply of, natural gas are highly inelastic. It is true that there is this inelasticity in the short run, but it is not true in the long run, which is the pertinent question here.

The demand for natural gas over any reasonable period of time is very

responsive to price changes. The decision as to what type of heating unit will be installed, how easily units will be modified or replaced depends largely on the relative values of competing fuels. Representatives of well-managed gas distributing companies have testified that when natural gas is priced equal to alternate fuels their sales are severely limited and when prices are increased above competitive fuels they are priced out of the market. Economic reasoning on elasticity of demand should recognize the total demand side of the market—present plus potential users.

The supply is also quite elastic in the long run. Since the search for and development of new oil and gas fields are highly competitive, they can be expected to respond to the market price. The effectiveness of this competition stems from the large number of enterprises engaged in this search, the ease of entry into this phase of the business, and the absence of artificial restraints on exploratory activities. In the short run the relationship between exploratory activity and the resulting discoveries is somewhat fortuitous. In the longer run it is clear that productive capacity also responds to market price. Furthermore, the effectiveness of competition in this area exerts a powerful restraint on profits from crude oil and gas production.

Incidentally, domestic exploratory efforts that precede the actual drilling have declined more than one-fourth since 1954. This downward trend is a matter of concern to me.

Whether or not the field prices of natural gas should be regulated seems a settled question. The Supreme Court has said so, the Harris-O'Hara bill pending before Congress is a regulatory measure, and most producers have accepted the inevitability of regulation. Producers do ask that regulation be workable. This brings us to the second major conclusion of Professor Dirlam, that the standard for regulation should be costs plus a reasonable profit. Regulation on a cost basis has been rejected as detrimental to the economy by the President. It has been characterized as delirious by the courts. The Federal Power Commission contends that it is confusing and impossible to administer. It failed in the coal industry. I do not see how it can be made to work with respect to natural gas.

Natural gas is a product produced jointly with liquid hydrocarbons. Expenses for discovery and producing are jointly incurred. The prices of one jointly produced product is to be regulated. The other, liquid hydrocarbons, is not to be. How should jointly incurred costs be allocated to the different products? The suggested answer is on a sales realization basis. Thus past prices determine costs and costs so determined establish future prices. Such circularity of reasoning not only violates economic but logical thinking.

If the needed flow of capital is to be attracted to this joint product industry and if the revenue from one product decreases, then the revenue from the other must increase. Thus the prices of crude oil and natural gas liquids, presumably exempt from control, will be vitally affected by the regulation of the other joint product: natural gas.

Before leaving this topic, may I suggest some excellent economic reading material. Students of this problem could well afford to read "Minimum Price Fixing in the Bituminous Coal Industry," by Fischer and James, published by

the National Bureau of Economic Research. This is a history of efforts to fix the price of one competitive fuel on a cost basis. It is a story of futility representing an expenditure of over 30 millions of dollars and ultimate abandonment of the entire project as impractical. The authors conclude that the difficulties of fixing prices of one competitive fuel on a cost basis presented insuperable difficulties. I concur. And that industry was not even clouded by the joint cost problem faced in regulating natural gas on a cost basis.

I am not confident that I am clear on Professor Dirlam's position with respect to conservation of natural gas. The most troublesome thought is encompassed in the closing words: ". . . it might be more desirable to enforce a limited use by certificating policy than to allow uncontrolled bidding by pipelines to skyrocket the field prices." I have always thought the judgment of the market the best allocator of our productive energies. Likewise, as a user of natural gas, I do not like to be retained in a preferred position while millions of other potential users are denied the right to even bid for the same economy, comfort, and conveniences associated with use of natural gas.

Professor Nelson has touched on some interesting problems. He holds that arguments about oil and national defense are not sound economically and present several conflicts. I agree that war is waste. Preparation for war is preparation for waste. To advocate building large reserves in case of war needs is not economic thinking by its very nature.

Then the position is taken that crude oil production is not a competitive industry because of state regulation of output. The exploration for oil is highly competitive. Reserves discovered and developed are regulated. To that extent any knowledgeable member of the industry will agree that production of crude oil is not "purely" competitive.

Since the long-run level of profits of the oil industry can be assumed to be at the competitive level, the price can be higher than economically necessary only if unnecessary costs are incurred. The only source of such excess costs is, as Professor Nelson has indicated, the state regulation of oil output to market demand and the resulting unused productive capacity. There is no other reason for assuming excess costs.

Before discussing the cost effects of regulation, two points need to be made. First, the maintenance of reserve producing capacity for national defense is not a policy of the state regulatory agencies. Reserve producing capacity has been one of the results of regulation, and the proponents have argued that this is desirable rather than otherwise. It is not claimed, however, that the individual states have the right to decide what is appropriate for national defense.

Second, the fact that some wells in Texas, for example, are permitted to produce at their allowable rate for only fifteen days out of the month does not by any means mean that Texas is producing at only half of its economic capacity. In important instances—the big East Texas field, for example—the allowable daily production for a full thirty days would far exceed the maximum efficient rate. Furthermore, a large part of the state's output is from wells whose productive capacity is so small that they are not restricted. The

precise margin of unused capacity is a subject of disagreement among industry experts, but it is far less than would be indicated by the figures quoted by Professor Nelson.

Granting that there is some unused productive capacity, this must be weighed against the cost saving achieved by state regulation. This saving cannot be measured with accuracy, but it is clear that it is very large. After a careful and exhaustive examination of the available evidence, Zimmermann reached the conclusion that regulation has accomplished the recovery of 50 per cent more oil from known fields with one-quarter of the number of development wells that would have resulted from unrestrained competition. Taking Zimmermann's estimate at its face value, it can be calculated that the average cost of producing a barrel of oil is about one-third of what it would have been if there were no state regulation. Even if the cost saving were much less than Zimmermann has estimated, it would still much more than offset the cost effect of operating the wells at somewhat below their productive capacity.

The purpose and effect of the state regulation of the output of existing wells are to avoid waste and prevent inequities among producers. There is no time here to go into all the reasons why basic conditions peculiar to the oil industry make this clearly necessary and desirable. It should be emphasized, however, that neither price nor maintenance of reserve producing capacity are the primary purposes of the regulation.

The regulation has, of course, influenced the price of oil. But the effect has been a lower long-run average price than would have prevailed without the regulation. This follows from its cost saving aspects plus the competitive pressure on profits.

Neither can one dismiss the state regulation on the grounds that its desirable effects could be accomplished better through unitization. Many people in the industry share Professor Nelson's enthusiasm for unitization. Nevertheless, the practical difficulties have been such that in the thirty years since it was first proposed only a few fields have been unitized. The relatively unsuccessful attempts at compulsory unitization through state legislation have served to emphasize these difficulties.

There is not time to give adequate consideration to the series of five proposals in the latter part of Professor Nelson's paper. I can only agree with him that they are impractical. Take, for example, his suggestion that fields be compelled to unitize "before drilling starts" in order to obtain certain tax advantages. Presumably he means after the discovery well but before the development wells have been drilled; otherwise there would be no known pool to unitize. Even so, it is not possible to determine the limits of the pool, and therefore what owners should be included in the unitization plan, until the development wells have been drilled. Furthermore, the variations within a particular pool in the amount of recoverable oil or gas under individual leases, and therefore the appropriate shares in a unitized output, may not be known until long after it is fully developed and there has been some experience with actual production. When the West Edmond Field in Oklahoma was finally unitized, the then known differences among various parts of the pool were recognized in allocating the shares in the unitized output to the extent that

owners of the more favorable sections received twenty-seven times as much gas per acre as the owners of the less favorable sections.

BRUCE C. NETSCHERT: Any attempt to make economic sense from the circumstances and actions of industry, which so often run counter to economic logic, will tend to evoke sympathetic consideration among the economic profession. Professor Nelson has made a valiant effort in the name of conservation, but I am left unsatisfied.

Professor Nelson recognizes the security dilemma in attempting to cope simultaneously with both global and limited war possibilities, but I do not see the relevance of tax policy to the role of the Middle East in our strategy. The area is important to us chiefly because it is the source of oil supply for Europe. The fact is, regardless of the scale of profits, who gets them, and how much they do in their own defense, we are faced with the same strategic circumstances. This may not be "fair," but there is not much in our strategic position that is. Tax policy here is better argued aside from grand strategy.

"Conservation" is a term with a whole spectrum of meanings; yet it is nowhere defined in the paper. I suspect Professor Nelson of donning the hair shirt when he approves the statement, "we must take steps to shift as much petroleum supply as possible from the present into the future," for the long run. To be sure, an economic connotation of the term conservation is the forward shift of consumption in time, but the magnitude of the shift is a function of the postulated price change and the interest rate. One justification for shifting "as much petroleum supply as possible" into the future would be a large and rapid price increase ahead of us, such as Professor Nelson suggests. Here is the crux of the matter; for it can be demonstrated that a rapid rise in the real cost of domestic crude oil is not a probability. Professor Nelson points out that technology has coped successfully with real cost pressures to date. I would add that it gives every indication of continuing to do so, at least for the next few decades. I would change Professor Nelson's parable of the pedestrian by having him say: "Take my money; I'll live on my annuities."

I share Professor Nelson's enthusiasm for unitization, but I would caution him on two counts: unitization is not a panacea and it is not feasible for all pools; the increasing effort required to discover oil is already a powerful stimulus toward increased recovery—hence toward more unitization. A relatively modest supplemental stimulus of unitization along avenues other than taxation should therefore prove sufficient. His program of changes, on a grand scale, of the economic climate of the industry, is, I fear, so unrealistic that it is merely an academic exercise.

It can perhaps be argued that Dr. Dirlam calls for a similar wholesale overhauling of the climate for the natural gas industry. Admittedly, the strict regulation of natural gas price is not an inconsequential matter, but Dr. Dirlam leaves the impression that he is a good deal more pragmatic in his treatment of the economic flaws of his subject industry. Again, however, although I symphathize with the attempt to create economic rationality, I find certain shortcomings.

Should the price of natural gas be controlled, asks Dr. Dirlam. Yes, he answers, because such control is the traditional and economically logical method of dealing with extreme supply inelasticity and consequent windfall profits. Now, I am as disturbed by the welfare aspects as the next person: Why should he get the windfall if I cannot? But I must disagree with the acceptance of long-run supply inelasticity as a condition in the natural gas industry while concurring fully in the description of the short run. Dr. Dirlam emphasizes the unmeasurability of the relation between price and exploration and suggests that the relation between available cash and exploratory activity is more significant. This may be true in the short run and for small price changes over the long run. But I believe there is a significant distinction between differences in the degree of price change and its effect on exploration. With a large price increase in the long run (and this is clearly assumed in the argument for control), there is a resultant increase in exploration for gas. Certainly it has been true in the long-run experience to the present. Would there be the strong activity today in the Louisiana condensate horizons—this is exploration for gas—if the price were at the level of the twenties? Or would there have been such extensive follow-up on the gas possibilities of the Four Corners province? There is, indeed, statistical evidence (I do not say it is convincing, but it is suggestive) of a relationship such as Dr. Dirlam denies.

In the past ten years the yearly additions to reserves in new fields and pools have consistently been a higher percentage of total yearly additions to reserves in gas than in oil. And more important, such wildcat additions to reserves show a significant increase during the period. They averaged 28 per cent of annual additions to gas reserves in the period 1947-51, compared to 34 per cent in the period 1952-56. The average wellhead price of gas for the earlier period was around 6 cents per M c.f.; in 1956 it was at least 12 cents, and reserves are currently valued as high as 40 cents. Can it reasonably be said that the anticipation of higher prices during the postwar era has not stimulated the search for gas alone? (Despite my difference with Dr. Dirlam on the matter of long-run supply inelasticity, I must say in passing that I fully agree with his position on costs and total future availability. The real cost of gas does not seem to be rising, and the indicated resource position is such that there should be no resource limitations over the coming decade or two.)

Dr. Dirlam advocates the cost-of-service basis of price regulation and avers that there is a reasonable means of averaging costs. He is commendably candid concerning its effects, admitting that some producers would get hurt while others got helped and that it might have restrictive results for total supply. This suggests that regulation on such a basis had better be with a light touch.

Conservation to Dr. Dirlam is more a matter of avoiding waste than of transferring consumption to the future. I am happy to see him remind us of the possibility of "synthetic" gas, but I would suggest a different implication. To him this implies a lower future value for natural gas; hence a lessened possibility of current underpricing (and concomitant economic waste) through regulation. To me the significance of synthetic gas is the ceiling it puts on the price of natural gas. To be sure, there is ample headroom at present, but re-

search and development can be counted on to lower it in the future. In any event, an unregulated price could not soar out of sight.

Another point on which I differ with Dr. Dirlam also bears on this matter of price: I cannot be as sanguine as he over the probability that the so-called "low-grade" use of natural gas for boiler fuel will substantially diminish in the natural course of events. The development of underground storage is certainly helpful here, but the total throughput of gas in pipelines is so enormous that there are severe limits on how far this can serve to maintain a high load factor for the pipelines. Could storage accommodate as much as 50 per cent of pipeline throughput? Moreover, there is a limit to the extent to which the fixed charges of transmission and distribution systems can be borne by residential and commercial customers. Granted their demand is inelastic, but at some point this inelasticity would be offset and the competition of other fuels would reassert itself in this market as it has in the industrial market.

The issues considered by Professor Nelson and Dr. Dirlam are of great importance, both as matters of public policy and as questions involving very large sums of money. Yet both refer, in the course of their argument, to the paucity of data. Despite the significance of the issues, we know precious little about how the oil and gas industry really functions in an economic sense. We badly need basic data, both for the polemics of public policy and for the indoor sport of theorizing. I would suggest in closing that the co-operation of the industry and the economic profession in building the data base is a matter of higher priority than the settlement of the issues discussed here. The fundamental responsibility rests, of course, with the industry. The criticisms presented in these two papers can be better met through making available the basic data than through counterargument in the absence of freely available information.

A CRITICAL EVALUATION OF PUBLIC REGULATION BY INDEPENDENT COMMISSIONS

THE ROLE OF COMPETITION IN THE REGULATED INDUSTRIES

By WALTER ADAMS
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Ideally, competition and regulation are opposite sides of the same coin. In theory, both are directed at the same objectives: efficient use of resources and protection of the consumer against exploitation. The means to these ends, however, are different. To be effective, competition requires rivalry among many sellers and freedom of entry into markets. It envisions a regulatory scheme in which the operation of autonomous market forces obviates the need for detailed government supervision. This is the philosophy embodied in the Sherman Act of 1890.

Regulation, as originally conceived, was to be both a supplement to and substitute for competition. It was to be applied in those industries where the cost of entry was so great or the duplication of facilities so wasteful that some degree of monopoly was considered unavoidable. Here the visible hand of public regulation was to replace the invisible hand of Adam Smith in order to protect consumers against extortionate charges, restriction of output, deterioration of service, and unfair discrimination. This was the rationale of the Interstate Commerce Act of 1887.

In many respects, the Sherman Act and the Interstate Commerce Act were generically different. One was cast in terms of negative prohibitions on certain types of conduct. The other was aimed at detailed and direct supervision of individual firms. One sought to protect the public by preserving competition, the other by regulating monopoly. Nevertheless, both hoped to protect the public against the aggressions of private interests rather than to shield these interests from the bargaining power of the public. Both relied on competition wherever its operation was functionally feasible and economically beneficent. Thus, Congress did not exempt railroads from the antitrust laws. On the contrary, Congress insisted on the direct regulation of individual railroads as well as on competition between them. As long as railroads "stood in the very gateway of commerce, taking toll from all who pass," the Sherman Act was strictly enforced against railroad combinations and conspiracies.

This regulatory policy, however, was first eroded and then extended. The regulatees themselves came to recognize that the better part of wisdom was not to abolish regulation but to utilize it. Gradually the public utility concept was transformed from consumer oriented to industry oriented regulation. By a process so brilliantly analyzed by Horace Gray, "the policy of state-created, state-protected monopoly became firmly established over a significant portion of the economy and became the keystone of modern public utility regulation. Henceforth, the public utility status was to be the haven of refuge for all aspiring monopolists who found it too difficult, too costly, or too precarious to secure and maintain monopoly by private action alone. Their future prosperity would be assured if only they could induce government to grant them monopoly power and to protect them against interlopers, provided always, of course, that government did not exact too high a price for its favors in the form of restrictive regulation."

Once this "new mercantilism" had taken root, it was extended to important segments of the economy. Between 1934 and 1940, Congress subjected radio, television, motor carriers, water carriers, freight forwarders, air carriers, and natural gas transporters to the certification requirements of independent regulatory commissions. To mitigate the debilitating effects of depression, the role of competition was substantially curtailed. New commissions were created, and "public convenience and necessity" became the shibboleth of the day.

It is significant, nevertheless, that in these regulatory statutes Congress did not sanction the abandonment of competition. The standards set up to guide administrative action may have been indefinite—"public interest" and "public convenience and necessity" may lack precise meaning—but, as the Supreme Court has squarely held, there can be "no doubt that competition is a relevant factor in weighing the public interest." In the transportation industry, said the Court, Congress has not made the antitrust laws "wholly inapplicable" nor has it authorized the regulatory agency "to ignore their policy." In short, Congress provided for the regulation of competition, not for its elimination by administrative fiat. Yet this is precisely the task which some commissions—not by intent, perhaps, but in effect—seem to have undertaken.

It is my contention that the experiments in public regulation during the last two decades have been singularly unsuccessful and that the creation of a fourth branch of government has, in many cases, resulted in undue restriction of entry, encouragement of mergers and consolidations, sanction for anticompetitive rate and service agreements, erosion of interindustry competition, and suppression of unregulated competition. Since this creeping paralysis infests most regulated in-

dustries, the following analysis of transportation is only illustrative of a more general and pervasive challenge.

I. *Trucking*

Entry Restrictions. Under the Motor Carrier Act, the ICC was empowered to regulate entry into the trucking industry through the licensing of common and contract carriers. Carriers which had conducted regular operations for three years prior to 1935 were to receive "grandfather" certificates or permits. Private and agricultural haulers were to be exempt.

In carrying out this mandate, the Commission imposes an almost insurmountable burden on applicants for new operating authority, extension of existing authority, and alternate route privileges. According to a recent report of the Senate Small Business Committee, the Commission tends to ignore shipper needs and to show an inordinate concern for the protection of established carriers. In its restrictive view of public convenience and necessity, the Commission often loses sight of the Congressional directive to promote efficient, economical, and flexible transportation service for the public.

Shipper need, the Commission admits, is to be measured in physical rather than economic terms; i.e., as long as existing carriers are physically capable of performing a particular service, prospective competitors are to be denied entry—even if their service is cheaper, better, and more efficient. In its decisions, the Commission emphasizes repeatedly that where existing carriers have expended their energy and resources in developing facilities to handle all available traffic and where their service is adequate, they are entitled to protection against the establishment of a new, competitive operation. This is what might be called the "going-concern" theory of regulation, a reluctance to subject existing firms—especially large firms—to competitive pressure. The test throughout is the physical adequacy of existing service, not the promotion of better and cheaper service.

The economic results of such regulation are not only restrictive but, at times, absurd. A carrier operating between New York and Montreal must operate via Reading, Pennsylvania, a detour of some 200 miles. A carrier between the Pacific Northwest and Salt Lake City may haul commodities eastbound, but not westbound—and so on, *ad nauseam.* According to James C. Nelson's study, 40 per cent of the specialized carriers were allowed to carry only one commodity; seven in ten regular route common carriers possessed less than full authority to serve intermediate points; more than one-third of the regulated intercity truckers had return haul limitations, and about one-tenth had no backhaul authority at all. That these regulations result in empty

mileage, deadhead runs, higher unit costs, inefficiency, and wastefulness is too obvious for further comment.

But, more fundamentally, why are any entry restrictions necessary, if the objective of regulation is to protect the public? The trucking industry does not fit the public utility, natural monopoly model, and does not require one or a limited number of large firms to achieve cost minimization. In trucking there are no substantial economies of scale. According to the New England Governor's Committee, for example, the coefficients of rank correlation between carrier size (as measured by gross revenues) and cost per vehicle-mile, ton-mile, or average haul in miles were so low as to indicate—at least for carriers operating in and out of New England—that size of firm bears little relation to operating cost. Efficiency in trucking seems primarily related to effective route utilization rather than size. This means that large firms have no inherent economic advantages over small firms and that existing firms have no insurmountable leads over new firms. It means that entry, in the absence of restrictions, would be brisk and the number of competitors large. It also means that by increasing competitive pressures, entry could work toward better route utilization and hence greater operating efficiency.

In an industry of this sort, entry restrictions tend merely to preserve the capitalized expectations of established carriers—carriers who maintain, on the one hand, that they are efficient and provide superior service and who demand, on the other, government protection from interlopers and competitors. In the final analysis, however, these restrictions do not assure the adjustment of capacity to demand, because the Commission, unlike its British counterpart, limits the number of firms rather than the number of trucks in operation. Entry control does not prevent established carriers from creating and, in the absence of rate competition, from perpetuating excess capacity. Without competition, moreover, there are no effective pressures to compel either efficient use of existing capacity or elimination of the excess capacity which tends to develop in a cartelized, monopolistically competitive industry. Thus, ironically enough, regulation may breed the very evils it was supposed to eradicate.

Mergers. Under the Motor Carrier Act, mergers and acquisitions require prior approval by the Interstate Commerce Commission. Approval is contingent on a finding that the proposed combination "will be in the public interest," in which case the participating parties are expressly relieved from the operation of the antitrust laws.

In a recent study for the Senate Small Business Committee, Professor Hendry and I found an increase in the number and size of trucking mergers as well as increasing concentration in important segments of

the trucking industry. Also notable was the upturn in aggregate concentration. Thus, in 1947, the largest 2,097 carriers (constituting 9.99 per cent of all carriers) earned 67.92 per cent of the industry's revenues. By 1954, the largest 853 carriers (constituting 4.7 per cent of all carriers) earned almost the same share of revenues; viz., 62.3 per cent. In other words, by 1954, the 853 largest controlled only a slightly smaller share of the industry (5.6 per cent less) than the 2,097 largest carriers (a 60 per cent larger number) had seven years earlier. This increase in concentration was accompanied by the net disappearance of some 2,800 carriers, or more than 10 per cent of the industry's population, in the brief span of seven years.

The rationalization of this trend seems to rest on a vague and vacillating merger policy which shows little consistency in approach or decision. What is embraced in one opinion as a natural and inevitable result of the economic facts of life is rejected in a second as not shown to be in the public interest. Where the fears of competitors are airily waved aside in one instance, the probable plight of competitors is of great importance in another. The Commission approves some acquisitions (usually by large carriers) because nothing has been adduced to show that they are contrary to the public interest. It rejects other acquisitions (usually by small carriers) because they are not shown to be consistent with the public interest. The first standard represents an effective rear-guard action by the Commission against protests; the second standard puts the full burden of proof on the applicant, with the necessary volume and quality of proof somehow always just beyond his reach.

Most disturbing, perhaps, about these decisions is the Commission's failure to indicate the specific public benefits to be derived from particular combinations. To be sure, the Commission goes through its ritualistic legalisms and turgid incantations, but it seldom makes an affirmative, economically meaningful showing that a given merger will result in lower rates or better service. More important, it seldom considers the possibility of achieving the statute's regulatory objectives by alternative, less restrictive techniques, such as granting extensions or admitting new carriers. Some years ago, for example, the Commission approved the combination of seven large eastern motor carriers into Associated Transport, Inc., which, as a result of the consolidation, became the largest trucking company in the country. The merger not only eliminated competition between the participating carriers over roughly one-third of their routes but also made Associated the only carrier to provide single-line, through-service from Florida to the Northeast. Despite the protests of the Agriculture and Justice Departments, the Commission insisted that this large-scale diminution of

competition would result in improved transportation service, greater efficiency of operation, and substantial operating economies. Apparently the Commission ignored the alternative of permitting some of the companies in the area to extend their operations and offer an integrated through-service—thus giving the public all the alleged benefits of the merger, plus competition on the long haul, and without sacrifice of the competitive mileage. The Commission eschewed this alternative, much to its subsequent embarrassment. Today, Associated is still the nation's largest trucker, but its recurrent deficits lend force to the suspicion that there may be more effective, and less anticompetitive, ways of promoting the public interest than by merger.

Nevertheless, the Commission seems to proceed on the assumption—so candidly stated by Chairman Clarke—that "there hasn't been enough concentration" and that "we need more concentration than has occurred if we are going to have a healthy, vigorous motor carrier industry." The Commission seems untroubled by the fact that this is nothing but an unproved assertion and that available evidence points in the opposite direction, indicating that carrier size per se has little or no relation to efficiency, profitability, or better service. If it did, why has Congress not empowered the Commission to do more than merely authorize mergers initiated by private parties? Why has the Commission not asked for, and received, the power to compel mergers in the public interest?

In the final analysis, the Commission's anticompetitive merger policy creates problems primarily because entry into the industry is restricted. Were entry free, "rarely, if ever, would a consolidation raise important antitrust problems." Competition, as the Brownell Committee observed, would then serve as "an adequate safeguard against private regulation of the market by would-be monopolists." But entry into trucking is not free, and competition is not allowed to perform its regulatory role. This makes it doubly important to ascertain whether mergers and concentration are, in fact, the most efficacious means of promoting the public interest.

Rate Bureaus. The Reed-Bulwinkle Act empowered the ICC to approve rate-making agreements which are in furtherance of the national transportation policy and accord to "each party the free and unrestrained right to take independent action." Commission approval immunizes such agreements from antitrust coverage.

Generally speaking, the Commission favors and encourages collective action in rate matters, regarding such action as a necessary part of the rate-making process. To guard against what it calls cutthroat competition, the Commission sees "no alternative to procedures calling for . . . initial joint consideration of rate changes." Throughout, it

emphasizes "the need for as much stability of rates as is practicable," in the belief that rate stability is more important than rate competition. But the Commission does not dismiss rate competition entirely. It still sees some value in competition from other modes of transportation.

This position might seem plausible, were it not for the manner in which the ICC exercises its maximum-minimum rate powers. As the Brownell Committee observed, the Commission utilizes its minimum rate power "both to protect the railroads from motor carrier competition as well as to safeguard the motor carrier industry from 'destructive' competition within its own ranks. Indeed, from the inception of motor carrier regulation to the present day, the power to fix minimum rates has been more significant than the authority to fix maximum charges." Under the circumstances, intermode competition can hardly contain the upward pressure on the entire rate structure. It cannot neutralize the combined impact of minimum rate fixing by government and private rate fixing by trade associations.

But what about the built-in checks and balances—the right of independent action as a safeguard against arbitrary and exorbitant charges, collusively arrived at? The record shows that, in practice, this right is little more than a sterile gesture. To the rate bureaus, it represents a minor annoyance which cannot break down the self-imposed restraints "born of history, habit, and strong mutual self-interest." To the Commission, it represents no more than an element of flexibility, a safety valve, to take care of special situations which must not be allowed to undermine general adherence to the idol of rate stability. In other words, independent action is not to be encouraged, but tolerated—tolerated so long as it falls short of promoting genuine rate competition.

That the right of independent action is more formal than real is repeatedly demonstrated in the cases. In the Southern Motor Carriers case, for example, the record showed substantial interference with managerial discretion and individual initiative in the rate-making process. The general manager of the conference announced his determination "that every member . . . should have exactly the same level of freight rates." The conference filed several suspension proceedings against the independently announced rates of its own members—no doubt to encourage independent action, free from coercion or fear of retaliation. The conference utilized meetings to facilitate the submission of identical Section 22 bids to the government. Finally, the conference used its power as a trade association to boycott recalcitrant outsiders who refused to go along with its rate policies. Yet the Commission, after insisting on some purely formal safeguards in the written agreement, approved the conference charter. The Commission held that rate bureaus have a right to protest the independent action of their mem-

bers, that such protests in no way prevent or discourage independent action, nor work any hardship on bureau members. In short, the Commission once again sacrificed substance for form. It looked at provisions in the charter rather than practices in the market place.

Ultimately, rate bureau regulation raises two major issues. First, does the Reed-Bulwinkle Act afford adequate protection to the public interest? Second, if so, does the Commission possess the wisdom to determine, as Congress intended, "whether the advantages to the public interest, through furtherance of the national transportation policy, are such as to outweigh the disadvantages to the public interest . . . guarded against by the antitrust laws." Obviously, carriers must be permitted a degree of collaboration in setting joint rates and through rates. "No one," as Wendell Berge concedes, "would gainsay this right. Common sense dictates it, the Interstate Commerce Act provides for it, and the Sherman Act does not forbid it." But when does collaboration become collusion and coercion, and how much of it must be tolerated in order to promote the public interest?

Intermode Competition. The Interstate Commerce Act directs the Commission not to authorize the acquisition of a motor carrier by a railroad or its subsidiary except upon finding that the transaction will be consistent with the public interest, will enable the railroad to use motor vehicle service to public advantage in its rail operations, and will not unduly restrain competition. This—as well as federal legislation affecting air carriers, freight forwarders, and inland waterways—reflects a historic opposition to common control over competing media of transportation.

Since the early days of the Motor Carrier Act, the Commission has respected this Congressional policy. Starting with the Barker case of 1936, the Commission consistently rejected the notion that "the way to maintain for the future healthful competition between rail and truck service is to give the railroads free opportunity to go into the kind of truck service which is strictly competitive with, rather than auxiliary to, their rail operations." The Commission always insisted that motor carrier service furnished by a railroad "be confined to service auxiliary and supplementary to . . . its rail service and in territory parallel and adjacent to its rail lines." Given the difficulty of promoting competition among railroads, the policy objective was to preserve as much competition with other means of transportation as possible.

Two recent decisions, however, may foreshadow a reversal of Commission policy. In the Pacific Motor Trucking case, the Commission permitted a subsidiary of the Southern Pacific to acquire one of the largest independent motor carriers on the West Coast and a formidable competitor of both the railroad and its trucking subsidiary. The hear-

ing examiner, after concluding that the transaction was a "concerted plan to restrain competition" and that its "primary objective" was the elimination of a powerful competitor, recommended denial of the application. But the Commission approved the merger without requiring, as is customary, the selection of key points which are break-bulk and consolidation points on the parent railroad. It shrugged off its responsibility to restrict the railroad's trucking operations to bona fide auxiliary and supplementary service. In short, the Commission not only sanctioned a substantial diminution of competition but also a significant erosion of intermode rivalry.

Similarly, in the Rock Island case, the Commission authorized a railroad subsidiary to conduct unrestricted motor operations across the breadth of the state of Iowa. Here again the Commission departed from the well-established precedent that railroads should be prohibited from initiating new or acquiring existing motor carrier operations which are not supplemental or auxiliary in character.

The issue here is fundamental. The railroads have persistently demanded the right to engage in unrestricted motor operations. Congress has consistently rebuffed them. Yet the Commission seems now prepared to effectuate through administrative adjudication what powerful pressure groups have failed to achieve through legislation. On the one hand, the Commission justifies drastic departures from intramode competition because the public is protected by intermode competition. On the other hand, the Commission approves the gradual erosion and undermining of intermode competition as well. If this trend continues, the integration (as distinct from co-ordination) of rail-truck service will become a reality—without legislative sanction and without an affirmative demonstration of the public benefits to be derived from eliminating this major source of competition in a regulation-riddled, restriction-infested industry.

Unregulated Competition. Under the Motor Carrier Act, agricultural haulers, as well as private carriers, were freed from the entry, rate, and route restrictions of the ICC Section 203(*b*)(6) exempted motor vehicles carrying ordinary livestock, fish, or agricultural commodities (not including manufactured products thereof), if such vehicles did not carry other property for compensation. Attacked almost from its inception by the regulated carriers and the Commission, the exemption has had a profound competitive impact on both rail and motor carriers and has been a live laboratory for testing the viability of competition in the trucking industry.

No comprehensive comparison of exempt and regulated rates is available, primarily because rates on exempt commodities do not have to be filed with the Commission. Individual studies, however, indicate

that the impact of exempt carriers has been substantial. One USDA study, for example, concluded that the rates on agricultural commodities "charged by railways and by regulated motor carriers generally have been reduced by the competition of exempt and otherwise unregulated motor carriers below a level which they would otherwise attain." Another study showed that on Florida citrus, the railroads in 1950 were forced to reduce their rates to several Midwestern cities in order to recoup their traffic losses to exempt haulers. Again, because of traffic losses, the railroads in 1950 reduced the rate on Virginia apples to southern destinations by 22 per cent—with the result that during the next two years the rail unloads of Virginia apples in southern cities increased by 159 per cent whereas the rail unloads in northern cities showed no significant change. In short, given the high cross-elasticity of demand for transportation, railroads and certificated motor carriers have felt the profound impact of exempt competition.

This impact is, perhaps, best measured by the extent to which unregulated carriers have increased their relative share of the market. Between 1949 and 1955, according to the ICC, nonregulated truck ton-miles increased 92 per cent, compared to 18.1 per cent for railroads and 56.8 for regulated trucks. Even more notable is the growing importance of truck transportation of commodities moving under the agricultural exemption. In 1939, for example, 0.5 per cent of the oranges shipped into Chicago came by truck; in 1955, 28 per cent. On cattle, the analogous percentages are 49 and 92; on hogs, 46 and 94; and on shell eggs, 60 and 99. With respect to apple shipments from the Appalachian belt, the preponderant volume in 1952 was handled by for-hire trucks operating under the agricultural exemption and by private carriers, also exempt from ICC regulation. This distribution of market shares appears to reflect significant differences in rates, speed, and quality of service.

Though the shipper benefits from the agricultural exemption have consistently been defended by all the farm organizations, by the Secretary of Agriculture and the Attorney General (under Roosevelt, Truman, and Eisenhower), and by Congress, the ICC never gave up the fight. Its persistent attempts to eliminate or emasculate the exemption are marked by both determination and futility.

First, the Commission announced the "poisoned vehicle" doctrine which held that if a vehicle was ever used to transport nonexempt goods, it automatically lost the benefit of the exemption. This interpretation which sought to make the vehicle rather than the commodity the test for the exemption was struck down by the courts.

Second, the Commission announced the "channels of commerce" theory which held that the exemption covers only the first haul from farm to market. This too was struck down by the courts.

Third, the Commission announced a number of restrictive commodity interpretations. Contrary to expert testimony of the Agriculture Department, the Commission held that redried tobacco leaf, dressed poultry, shelled nuts, nursery stock, flowers and bulbs, and frozen fruits and vegetables are not agricultural but manufactured goods. In all these cases, the courts have reversed the Commission—often with overtones of ridicule. One judge pointed out that "a chicken which has been killed and dressed is still a chicken." Another observed that "after shelling, a nut is still a nut." Substantial identity, according to the Supreme Court, is the relevant test: "where the commodity retains a continuing substantial identity through the processing stage we cannot say that it has been 'manufactured' within the meaning of Section 203(*b*)(6)."

Fourth, defeated in its frontal assaults, the Commission launched a flank attack. It decreed that all trucks leased by a common carrier must be leased for at least thirty days. This would have nullified the exemption for agricultural haulers who use single-trip or backhaul leases to achieve full utilization of equipment and consequent economy of operation. But this strategem also failed, when Congress specifically exempted agricultural haulers from this crippling regulation.

In general, the Commission has been consistently defeated in both its judicial and legislative efforts to curtail the exemption. As Judge Graven concluded in the Kroblin case:

> There are two features that stand out most predominantly in the voluminous legislative history relating to amendments made or proposed to Section 203(*b*)(6). One feature is that every amendment that Congress has made to it has broadened and liberalized its provisions in favor of exemption and the other feature is that although often importuned to do so, Congress has uniformly and steadfastly refused or rejected amendments which would either directly or indirectly have denied the benefits of the exemptions.

The explanation for this is probably twofold. First, performance under the agricultural exemption has demonstrated that shipper and carrier interests can both be served through a competitive industry organization. The shipper benefits from lower rates, speedier and more flexible service, while the carrier retains his managerial discretion and competitive opportunity. Second, and more important, perhaps, the exemption has remained inviolate because the political strength of the farmer effectively neutralized the bureaucratic rapacity of the Commission. Here, indeed, is countervailing power at its best.

Summary. Motor carrier regulation, after twenty-five years of ICC administration, can boast of one major achievement. It has created a government-approved freight cartel—with entry restricted, mergers encouraged, rate fixing tolerated, and outside competition harassed. It has proceeded on the untenable assumption that competition in trucking is unworkable and, hence, against the public interest.

This anticompetitive policy rests on bizarre rationalizations. Entry

restriction is tolerated, because the Commission protects shippers against unreasonable rates. Private rate fixing is allowed, because intermode competition guards against exploitation. Intermode competition is curtailed, on the one hand, to protect each mode and preserve its "inherent advantages"; it is eroded, on the other, to permit rail-truck integration in the public interest. Mergers are sanctioned to promote efficiency, but exempt carriers are harassed precisely because their operations are too efficient, their rates too low, and their service too good. The only constant in this equation is a paranoid, bureaucratic fear of competition and its effects on established carriers.

There is, to be sure, some current agitation for more competition. The Cabinet Committee on Transportation, for example, has urged a greater reliance on competitive rate making and a curtailment of the Commission's rate regulation powers. But this is not a fundamental policy reorientation. In essence, the Committee proposes to allow railroads to use cost-of-service pricing on commodities where the demand elasticity is high and intermode competition strong, and to use value-of-service pricing on other commodities—thus shifting more of the overhead burden to commodities primarily dependent on rail service. This means more discrimination, not more competition. Strangely enough, the Weeks Committee advocates competitive rate making, but is silent on collusive, Reed-Bulwinkle rate fixing. It eulogizes competition, but favors tighter controls over private and exempt motor carriers. It speaks of competition, but, in the same breath, stresses the need for protecting common carriers in the interest of national defense.

This position is neither consistent nor sound. If we are to stifle unregulated competition to protect common carriers and prevent traffic dilution, where is this process to stop? Should we also restrict common carrier trucks to increase the load factor of railroads, and curtail private automobile travel to assure fuller utilization of bus line capacity? What evidence is there that competition cannot—as in other industries—eliminate excess capacity and prevent the dilution of traffic for existing carriers? Moreover, is an inherently competitive industry like trucking incapable of serving the national defense? Would Mr. Weeks, in the interest of national defense, urge government regulation of the steel industry, where there is less evidence that competitive forces are strong enough to promote the public interest? Finally, if common carriers are to provide stand-by capacity for national defense or to engage in uneconomic operations, should we pay for this by suppressing more efficient competitors or through outright subsidization?

Perhaps the root of the problem is political rather than economic. Once a commission is given power to dispense private privilege, it is

almost compelled to validate the financial values predicated on such privilege and does so by suppressing competition wherever possible. The only escape from this dilemma is to abolish the power of privilege and, where economically and technologically feasible, to place greater reliance on the regulatory machinery of competition.

II. *Air Transport*

Entry. Like the trucking industry, air transport is not a natural monopoly. It does not require a heavy investment in rights of way, airports, weather stations, etc. The individual airplane is the basic unit of efficiency, and there are no marked economies of scale. Competition, therefore, is technologically possible and economically feasible. But the amount of competition and its role in the industry depend primarily on the entry policy of the Civil Aeronautics Board. The Congressional mandate, though more precise than in the Motor Carrier Act, requires only that the Board consider "competition to the extent necessary to assure the sound development of an air transportation system."

Until very recently, the Board's certification policy was unduly restrictive and protective. Despite a 4,000 per cent increase in demand between 1938 and 1956, not a single new passenger trunkline carrier was allowed to enter the industry. As Ross Rizley, a former CAB chairman, told the Celler Committee:

> In every instance thus far in which the Board has found that additional and competing passenger trunkline services on high-density segments are required by the public convenience and necessity it has concluded that the objectives of the act would be better served by the award of the route to a carrier already holding certificate authority than to a new company.

According to Mr. Rizley, this restrictive entry policy reflects an "undue shift of emphasis from public convenience and necessity to the seeking and protection of private carrier rights." As a result, eighteen years after regulation was instituted, the grandfather carriers still earn roughly 90 per cent of all commercial revenues in the industry.

Most questionable was the Board's policy toward the irregular or nonscheduled airlines. These carriers were denied entry because the Board feared the probable diversion of traffic from established carriers, the effect of such diversion on existing load factors, and the consequent subsidy drain on the federal treasury. But these fears were unfounded. As the Senate Small Business Committee concluded in 1953:

> . . . irregular airlines have not caused a diversion of traffic from the certified carriers. While there is duplication of routes between the irregular and certificated carriers there is relatively little duplication of markets. The introduction of hundreds of thousands of lower income bracket travelers to aviation should be attributed to the irregulars. Their pioneering, which has been along economic rather than geographic lines, has shattered the concept of the fixed, limited market for civil aviation. As a result, the question is no longer what portion of a fixed pie any company will get, but rather how much the entire pie can grow.

Clearly, the Board failed to appreciate the dual role which nonscheduled competition played in the industry. On the one hand, the nonskeds provided a yardstick for measuring the possibilities of profitable, unsubsidized service. By exerting competitive pressures on the certificated carriers, the nonskeds proved a valuable adjunct to conventional regulatory controls. On the other hand, and probably more important, the nonskeds provided promotional competition. They innovated low-cost coach service and thus tapped formerly untapped markets. Far from diverting traffic from the certificated carriers, the nonskeds created traffic which formerly did not exist. As the Celler Committee points out, the "skimming of the cream" complaint against the nonskeds "does not have substance." The best indication that the certificated airlines have not been hurt by "diversion" is that, with minor exceptions, they no longer require government subsidy.

It is significant that the Board, under the leadership of Ross Rizley, modified its unduly restrictive entry policy. Starting in 1955, the Board began to give additional routes to the have-nots of the certificated industry. It also elevated the nonskeds to the status of supplemental carriers, permitting them ten flights per month in the same direction between any single pair of cities. The Board conceded that its past efforts to restrict regular operations by the nonskeds in order to protect the certificated lines had "outlived its usefulness." In short, the Board recanted but only after many nonskeds and their competitive potential had been eliminated. It took a step toward more effective competition. But before this goal is reached, the Board will have to assure more balanced route structures and greater participation by small carriers in major traffic markets.

Rate Conferences. Just a word about rate conferences. Though Sections 412 and 414 of the Civil Aeronautics Act are closely comparable to the Reed-Bulwinkle Act, the CAB has been far more sympathetic to competitive rate making than the ICC. In the Air Freight Tariff case, for example, the Board refused to permit compulsory advance notice of rate changes or group discussion of "local" rates charged by a single carrier. It refused to sanction "the establishment of rate levels by agreement rather than by competitive forces." Upholding "the concept of individual rate making in the air transport field," the Board insisted that "this spur to competition should not be cast aside in the absence of compelling reasons for doing so."

The Board's record on international rate conferences, however, is less impressive. The Board approved the IATA agreement despite its condemnation of IATA as a "monopolistic price-fixing cartel" which serves "the private interests of the international carriers . . ., is contrary to the philosophy of the antitrust laws, and is opposed to the

protection of the basic rights of the traveling and shipping public." The Board advised Congress that "no proper concept of governmental responsibility can justify leaving the ultimate determination of a fair and reasonable international rate structure wholly in the hands of an all-embracing international cartel." Yet, by approving the IATA agreement and refusing to withdraw its antitrust immunity, the Board has done just that.

As a result, international air fares are outrageously high and bear little relation to operating costs. Transatlantic fares, for example, are more than double the corresponding domestic rates: a New York-London round trip, first class, costs $720 compared to a New York-Los Angeles round-trip fare of only $301.90. The respective coach fares of $522 and $198 are even more divergent. A further result of IATA's rate fixing is the substitution of service competition for price competition. But this service competition tends merely to divert traffic from one carrier to another without at the same time enlarging the over-all market. Costs are raised through increased sales efforts, overexpansion of schedules, and the operation of more luxurious equipment than the traffic justifies. These higher costs eat into profit margins and benefit neither the consumer nor the investor. Unlike price reductions, such competition does not expand the total size of the market in which all carriers share.

To be sure, the Board has asked Congress for the same power over international fares as it has in the domestic field. This power the Board should have. But even without it, the Board can still choose an open rate situation. Lacking authority over specific rates, it can still reject a collusive rate fixing machinery. To do so would not precipitate certain chaos. On the contrary, competitive rate reductions may well stimulate the same phenomenal increase in international travel which coach competition triggered in the domestic market.

III. *Ocean Shipping*

Entry. The regulatory restrictions in ocean shipping are somewhat analogous to those in trucking and airlines. While the Federal Maritime Board does not control entry directly through certificates of convenience and necessity, it limits entry through the operating differential subsidy. The Board determines, for example, which routes are "essential for the promotion, development, expansion, and maintenance of the foreign commerce of the United States" and how much subsidy a particular carrier shall get in order to meet foreign flag competition. Where more than one American line applies for subsidy on a given route, the Maritime Board must deal with the same type of issues as arise in certification proceedings before the ICC and CAB.

Rate Conferences. The right of shipping conferences to engage in collusive rate fixing has long been recognized by law. What is at issue, however, is whether these conferences—unlike their rail, truck, and air counterparts—may also coerce outsiders through an exclusive patronage dual rate system which imposes a penalty rate against shippers patronizing nonconference vessels. Counsel for the Maritime Board has frankly conceded that this contract system, if effective, "will result in a complete monopoly in the sense that all cargo moving in a trade where the system is used will move in ships of conference carriers." The Board has justified the system on the grounds that "something more than voluntary shipper co-operation" is necessary if the conferences are to operate effectively. The courts, however, in the Isbrandtsen case (1956), have held that the coercion and discrimination inherent in exclusive patronage contracts are not authorized by statute. This raises the basic policy question: whether the conference system per se is sufficiently desirable to justify coercive measures which would ultimately drive independents out of business or into the conferences. The issue, in short, is rate fixing by compulsory cartels.

IV. *Conclusion*

Summarizing, then, public regulation involves the application of two fundamental policies. One is purely regulatory in nature. Its aim is to assure the public of adequate service at reasonable rates in industries with "natural" monopoly characteristics. Its orientation is static, negative, and protective. The other policy involves primary reliance on competition. The yardstick device is used, not only as a measure of industry performance, but also as a spur to increased efficiency, rate reductions, and service improvements. Promotional competition is used to foster developmental pioneering and over-all growth of the industry. Throughout, the emphasis is on progressive performance—achieved through the maintenance of competitive opportunities and the promise of competitive rewards. Thus competition serves as a useful adjunct to regulation and promotes the attainment of goals that are seemingly unattainable by administrative fiat.

Unfortunately, this regulatory role of competition has never been fully appreciated by the high priests of administrative expertise. Even in the absence of misfeasance, venality, or irregularity, they have generally succumbed to the institutional infirmities of the regulatory process. The cost and delay of processing applications, the harassment by powerful protestants, the slavish adherence to legal technicalities, the pharisaical devotion to a case-by-case approach, the petulant defense of the *status quo*—all these have militated against the competitive entrepreneur and the dynamic innovator. Commissions have proved pe-

culiarly sensitive and susceptible to organized pressures: witness, for example, the integrated opposition of railroads, railroad labor, giant motor carriers, and a slightly tainted teamsters union to a more competitive trucking industry. Commissions have shown a congenital distaste for dealing with large numbers of firms. They have dreaded the necessity of facing up to the realities of today rather than clinging to the outmoded regulatory concepts of the eighties or thirties. In short, commissions have acquired an anticompetitive bias, a bureaucratic rigidity, an annoyance with the forces of change. In an era of unparalled technological advances, they have tried to freeze an anachronistic grandfather pattern and to suppress whatever dynamic forces threaten to disturb that pattern.

What, then, are the policy implications? First, with respect to such inherently competitive industries as trucking, gradual but total deregulation seems desirable. Second, in industries where some economic regulation is considered necessary, Congress should specifically direct the administrative agency "to promote competition to the maximum extent practicable" and "to grant no exemptions from the antitrust laws unless the regulatory need therefor is clear." Third, Congress should make the approval of entry applications mandatory, except where a commission can affirmatively show that such approval would be prejudicial to the public interest. In other words, the presumption should be in favor of competition and the burden of proof, in case of denial, should be on the commission, not the applicant. Fourth, Congress should specifically prohibit private rate fixing. If rate fixing is necessary to prevent destructive competition and to protect the public interest, this task should be assigned to a duly constituted public body, not delegated to private interests. Never should governmental entry restrictions be coupled with private rate fixing. Finally, where appropriate, competition should be encouraged from whatever source it may spring. The integrity of interindustry or intermode competition should be preserved from erosion by merger or internal expansion. And where, as in electric or atomic power, the autonomous forces of competition may be inadequate, we should place increasing reliance on institutional competition; i.e., competition from federal, state, municipal, and cooperative bodies. Such competition, as experience shows, benefits not only the consumer but also the private segment of the industry which is subject to its pressure.

Oliver Wendell Holmes once said that we need education in the obvious more than investigation of the abstruse. May I suggest, however, that education in the obvious is not enough. What we need most of all is the courage to act on it.

THE PROTECTIVE FUNCTIONS OF COMMISSION REGULATION

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For purposes of economic analysis, it is illuminating to group the principal functions exercised by regulatory commissions in three categories, which will here be termed the antirestrictive, the corrective, and the protective. This classification is based on the objectives of control rather than its subject matter; thus, the power to regulate rates, like many other powers, can be exercised in any of the three indicated directions. This paper deals with the economic consequences of protective regulation. A brief preliminary discussion of the suggested threefold classification will help to define the main problem at hand. Some examples will be drawn from the field of transportation regulation. However, the analysis applies generally to regulated industries, though not all the regulatory activities referred to are present in every actual instance of regulation.

The Three Main Types of Regulation

There are two sorts of regulatory activity which may fairly be called antirestrictive. The first of these, exemplified by control over interfirm transactions such as mergers and agreements, seeks to prevent unjustified elimination of competition with or among the regulated firms themselves. The second, exemplified in the prohibition of price discrimination, is concerned with the impact of the policies of the regulated firms on the markets served by their customers. It seeks to prevent adoption of price or other sales policies which will confer unwarranted advantage or disadvantage on one or more of these customers. This advantage or disadvantage can be restrictive in the fundamental sense of the term which will be more fully developed in the following discussion of protective regulation; that is, it can raise arbitrarily the effective price of a certain output relative to other prices. Discrimination can bring about this effect by eliminating certain firms, even though temporarily, from one or more markets. Both sorts of antirestrictive function are included in the regulation of general industry under the antitrust laws as well as in the activities of such "public utility"-type regulatory bodies as the Interstate Commerce Commission.

The Act to Regulate Commerce, which created the Commission,

seems to have been very largely antirestrictionist in intent. The anti-pooling clause (Section 5) was evidently directed to the maintenance of competition among the carriers; and this aim has continued to be one of the guiding principles prescribed for the Commission in subsequent statutes, though Section 5 itself was of course modified by the Transportation Act of 1920. The provisions dealing with rate regulation (Sections 1, 2, 3, and 4) were designed mainly to root out alleged artificial advantage or disadvantage to particular shippers or shipper groups. Even the question of individual rate reasonableness was then and is now regarded by both litigants and Commission as less concerned with the over-all rate of profit than with the relative level of rates on similar traffic. It was the extraordinary strategic importance of the railroads—that is, the importance of rail transport cost and availability in determining access to markets—rather than any extraordinary excess profits which accounted for the special exercise of public control in their case.

By corrective regulation is meant, first, the prohibition of certain activities harmful to the community which might nevertheless have been profitable in the short run, or even in the long run where private and social costs or returns persistently diverge. This subgroup is typified in the transportation field by safety regulation and is, of course, also applied to businesses not regarded as public utilities. The second corrective type is control of the prices charged by regulated firms with a view to eliminating excessive rates of return. In this country, this sort of price control is the chief feature distinguishing public utility regulation from more generally applicable legal controls.

The long-established combination of procompetitive regulation with control over the structure and level of prices is impossible to rationalize in terms of traditional economic theory, according to which every market must be either monopolistic or competitive: a theory which identifies excess profits and discrimination with monopoly, and monopoly with the absence of competition. The combination is, however, entirely consistent with the nature of the transport markets of the real world, which are typically examples of monopolistic competition. Participant firms, though faced with competition which is real and valuable, may be able to engage in restrictive practices and obtain sheltered positions in ways that are by definition ruled out where competition is pure; moreover, excess returns may persist even though artificial restrictions are eliminated as far as possible without disproportionate cost. In such markets, direct price control may well be a necessary supplement to competition strengthened by a procompetitive governmental policy.

Where the jurisdiction of the regulators does not cover firms actually or potentially in competition with each other, they can of course exer-

cise no procompetitive function in the sense of the maintenance of competition among the regulated. It is nevertheless practically important even here to stress the supplementary rather than substitutional relationship between competition on the one hand and price regulation on the other. There is danger that the fact of price control will be cited as evidence that the competition of unregulated substitutes is unnecessary or inappropriate. The temptation is to make the path of the regulative agencies easy; to eliminate the uncertainties arising from outside competition by empowering these agencies to suppress it; and thus also to soothe the feelings of possibly outraged regulatees who may complain of having to serve two masters: the commission and the competitive market. Thus anticompetitive regulation is made to seem a reasonable consequence of price regulation; and this is especially likely to occur where the regulators have been charged with supermanagerial responsibilities.

It is these two subgroups—the anticompetitive and the supermanagerial—which together make up the protective group of regulatory functions. Both are absent from the regulation of general business on the national level, though it appears probable that state and local regulation of some non-"public utilities" contains an element of protectionism. By supermanagerial regulation is meant that which aims at efficient profit maximization on the part of the regulated firm. The commonest example is the review of private management decisions in the light of their financial advisability. This subgroup, which may also be termed "positive" regulation in memory of its most conspicuous member in this country, the Transportation Act of 1920, seeks to protect the profits of regulated firms from the mistakes of their own managements.

The second type of protectionism—which is protection of the profits of regulated firms from the inroads of competition—did not become a prominent part of national transport regulation until the thirties, when competition came into general disrepute as a result of the depression. The anticompetitive aim was most notably embodied in the entry control provided under the national regulatory statutes with respect to motor and air transport enacted in this period. I do not mean to say that all legal control over entry is necessarily protective in intent or in effect. Some entry control may be purely corrective in the first of the senses indicated above. It is the content of entry control, as revealed in the actual criteria governing the decisions of the regulators, that determines the category to which it belongs.

It is difficult if not impossible to defend either type of protective regulation on economic grounds. On the contrary, it can be shown that the direct result of anticompetitive regulation, or governmental re-

striction, is a net loss to the community even if its administrative cost is not taken into account. It seems likely that the same is true of positive regulation; at any rate, this type of regulation represents at best a costly and inferior substitute for a more suitable distribution of functions between regulators and regulated. These conclusions follow from the analysis set forth in the remainder of this paper.

The Economic Consequences of Governmental Restriction

Various administrative expedients can be used to maintain revenues in the face of a competitive threat. Deliberate stabilization or boosting of any particular demand can be accomplished in at least three ways: by price manipulation, by restriction on competitive supply, or in some exceptional cases by direct substitution of official or management choice of product or firm for that of the buyer (e.g., in "integrated" transport, where the choice between types of carrier for any given shipment can be left to the common management).

In the following discussion, the postulated form of government intervention is an enforced increase in the price charged by the threatening competitor, which we shall assume for the sake of convenience to be a motor carrier, while the protected firm will be assumed to be a railroad. A difference in the products offered is not essential to the analysis, which applies equally well to protectionism within a given industry. Neither is it essential that the form of intervention be a price increase. Evidently, the same reasoning would apply to the forcible prevention of a price decrease. But more than this, any limitation on competitive supply can be dealt with as an increase in its effective price; for example, permanent exclusion from a given market is equivalent to fixing the effective price indefinitely high. The effective price comprises, then, not only any payments actually made to the seller but all costs incurred in obtaining the desired amount of the product, there being included the money equivalent of any delay in its availability. Throughout the analysis, the gains and losses to employed factors possibly resulting from any change in output are assumed to be included in the single figure representing gain or loss to the firm; accordingly, cost figures are assumed equal to transfer cost.

We take up first the case where the assumed increase in the effective price of motor carriage results in the diversion to the railway of traffic which would otherwise have been shipped via the restricted motor carrier. It will be shown that the resulting gain to the railway, plus any other gains which may arise from the assumed effective price increase, will almost certainly be smaller than the resulting losses, so that a net loss is created for the community as a whole. Put as briefly as possible, the reason for this result is as follows: On traffic diverted from

road to rail, the railway gains to the extent that its new revenues exceed the additional expenses incurred in its carriage. The shipper, on the other hand, loses to the extent that he is deprived of a preferred service—preferred because less costly, more satisfactory in quality, or both. If, as is not improbable, the imposed rate increase results in a decline in the total volume of shipment by both means of transport taken together, the loss to the shipper and his customers occasioned by this decline must certainly exceed the gain to the railway, since the latter receives no revenue at all on traffic that it does not carry. Regarding traffic diverted from road to rail, the case is somewhat more complicated; nevertheless, it can be shown that, given only that the railway is not (before intervention) turning away traffic that it might profitably carry, its gain must be less than the loss to the shipper occasioned by such diversion. This is true regardless of whether the actual rail rate that the shipper pays is higher, lower, or equal to the price that he paid to the motor carrier.

A simple comparison of the cost to the shipper of different services would clearly be similar to an attempt to subtract apples from pears. A generally useful monetary measure of loss to the shipper can be provided by introducing the concept of the compensating rate, defined as that rate which would have been just low enough to induce diversion to the railway if the motor rate had not been raised. (If the competing firms produce identical products, the compensating price is of course equal to the price the shipper is actually paying to his chosen firm.) Shipping by rail at the compensating rate, the shipper would be by definition as well off as he was shipping by motor at the old motor rate.

The loss imposed on him by the manipulated increase may therefore be measured by the excess of the actual rail rate over the compensating rail rate, multiplied by the number of units diverted. The monetary gain to the railway is measured by the excess of the actual rail rate over the average added cost of carriage, multiplied by the same number. Therefore, the gain to the railway can be as large as the loss to the shipper only if the average added cost of carriage is no larger than the compensating rate. But if this were true, the railway could have profitably carried the traffic at the compensating rate; that is, without the aid of the manipulated motor rate increase. Our conclusion has been demonstrated: Given a rational rail rate policy, the gain from diversion is less than the associated shipper loss. Because of defects in railway pricing, the proviso may not always hold true. These defects should in any case be removed.

The proposition that all business capable of covering added costs can be profitably taken is, of course, subject to the requirement that each sale for which a price is set be considered not only by itself but also

as part of any larger group of sales with which it shares common expenses. This consideration does not materially affect our conclusion, which can be restated to take it into account: An excess of price over added cost—added cost being interpreted to mean only that cost actually avoided when a given sale is not made—does not always indicate a genuine gain when the sale is considered as part of a larger whole; but even where there is a genuine gain, on diverted business the loss to the shipper more than probably exceeds it, since otherwise the sale would have been made without protective intervention.

A net gain to the motor carrier may result if its rates have been previously held below the most profitable level by regulation. This possibility causes no difficulty, since this gain represents a straight transfer from nondiverted shippers, provided there is no change in average cost. Only in the unlikely event that average costs become lower as a result of the decrease in traffic will the carrier's gain exceed the shippers' loss; if average costs rise, the reverse is true.

With appropriate modifications, the above argument refutes the often-urged view that traffic should be diverted to railways to increase their utilization and thus reduce the average cost of carriage. Fixed costs are, of course, not reduced at all in total sum by adding more traffic; they are merely spread over a larger number of units. Thus the advocate of diversion is really asking that additional traffic be forced onto the railroad so that its shippers may, by sharing the burden of fixed costs, diminish the amount which must be borne by persons already shipping by rail—or, if the railway is subsidized, borne by the taxpayer. Here, as the above argument shows, the losses to shippers of diverted traffic exceed the resulting gains to rail shippers or taxpayers. Another field in which the argument may be practically significant is urban transportation, where it exposes the objectionable character of proposals to support such facilities as subways by deliberate restrictions on bus or other transport.

We consider now the possibility that the rise in the effective price of motor transport does not divert traffic from road to rail, but enables the rail carrier to charge higher rates on existing traffic than would have been profitable with the old motor carrier rate (because of loss of traffic to the motor carrier). The gain to the railway would be at least offset by the loss to the shippers who would be forced to pay higher rates than before; losses to shippers diverted from the railway would, by an obvious adaptation of the argument set forth above, be greater than the gain to the firms receiving the diverted traffic, provided that they in turn can be assumed to be rational. Again, there is almost certain to be a net loss to the community as a whole, though its magnitude will, as before, be very difficult if not impossible to measure.

The above argument condemns the use of restrictive regulation even

where the maintenance of a certain output of a given product is held to be in the public interest regardless of market demand; that is, even where the benefits accruing to the community from the maintenance of this output are not adequately measured by the returns to the firms producing it. In such a case, maintenance of the desired output by means of subsidy is evidently to be preferred to the use of restrictive regulation, since the cost of the subsidy, unlike the losses arising from restrictive regulation, is no larger than the additional net revenues accruing to the producers. The same reasoning would apply where the profitability of certain firms was per se in the public interest, though the writer can think of no actual circumstances where this condition would hold. Other forms of "stability"—e.g., predictability of prices over a certain period of time—can obviously also be brought about by more direct and less costly means, to the extent that they are really needed.

The Economic Consequences of "Positive" Regulation

A common argument for a regulatory check on the commercial advisability of certain management decisions holds this check to be necessary to avoid unjustified increases in the cost of the regulated product and hence in the prices which must be charged to its consumers. Now it is certainly true that managerial mistakes can increase production costs; and it seems undeniable that everybody makes some mistakes. Nevertheless, given an intelligent regulatory policy which preserves financial incentives to efficient management, the net result of adding regulatory review to managerial initiative can be a gain only if the regulators possess substantially greater commercial ability than the managers, so that the salutary effect of their wisdom will offset not only its extra administrative cost but also the other probable harmful effects to be discussed shortly. The mere lengthening of deliberation, like the calling in of independent opinion, reaches at some point a limit where the game is not worth the candle; if this point has not been reached by private management, it is because proper incentives have not been maintained.

Is it probable that the regulators are appreciably better businessmen than the managers? Does the job of regulation attract people whose commercial aptitude, so to speak, is appreciably greater than those attracted to a business career? Does the experience of regulation develop this aptitude better than managerial experience? I should venture to say that the answer to these questions—at least in this country at the present time—must be no.

In addition to expensive duplication of managerial functions, supermanagerial regulation tends to encourage the view that the regulators are generally responsible for the financial success of the regulated

enterprises, and thus to produce at least two economically undesirable effects; namely, the promotion of a dependent attitude on the part of management and the rationalization of demands for regulatory restriction of competitors. It appears that these effects did follow from the railroad legislation enacted in the United States and the United Kingdom shortly after the first World War, under which each government undertook, in some sense less than a guarantee but more than a mere commitment not to inflict unwarranted losses, to maintain, through rate regulation, the earnings of the railroads at a level which presupposed the substantial continuance of the prewar demand for rail services.

As is well known, neither government succeeded in fulfilling this commitment. This experience was certainly of permanent value in demonstrating that in a changing economy one cannot depend on the use of ordinary regulatory powers to maintain the solvency of an industry or a firm. The less obvious lesson of this experience concerns the effects of the combination of a positive governmental commitment with economic changes which prevent its fulfillment: It can be convincingly argued that a tendency on the part of management to shift the blame for their misfortunes to the governmental agency which was formally instructed to prevent them was the most important outcome of the new transportation policy adopted in the United States in 1920, as well as of the "standard revenue" provisions of the Railways Act, 1921. Moreover, it can hardly be doubted that in both countries the case for national restrictive regulation of motor carriers was strengthened by governmental semicommitments to maintain rail earnings, even though in this country the rate-making rule of 1920 had been significantly amended before 1935. Insofar as anticompetitive legislation tends to place general financial responsibility with the regulators, it may be expected similarly to produce managerial dependency and promote further legislative restriction.

The objections set forth here apply to a large class of programs advanced under such titles as "co-ordination," "integration," or "looking at transport as a whole," as well as to protective regulation of the more familiar types. On the other hand, these objections do not apply to some other regulatory policies which are of financial benefit to the regulated; they are relevant only to measures that put arbitrary restrictions on consumer choice or place the regulators *in loco parentis* with relation to the regulated. For example, use of the minimum rate power to prevent genuine cutthroat competition (i.e., selling at a loss to drive a competitor out of business) is not objectionable on the basis of the above discussion. This particular intervention is antirestrictionist in character, and also forms a proper part of the antitrust regulation of general business. Similarly justified is the use of government compulsion to bring about cost reductions or product improvements blocked

by failure of interfirm agreement, provided that the limited nature of regulatory responsibility in these matters is unmistakably advertised. This condition can be met by a careful statutory declaration of policy and by allowing this type of regulatory action only at the request of an affected firm.

Moreover, it is not suggested that regulators should ignore the effects of their actions on carrier earnings. The system of regulated private enterprise cannot succeed if the rate level is persistently held below a remunerative figure or the development of business impeded by the imposition of inappropriate formulae upon the rate structure. Here again, a clear-cut statutory declaration might prevent both adoption of arbitrary rate standards and confusion of essential restraint with paternalism.

Public Ownership versus Regulated Private Enterprise

In general, protective regulation tends to sacrifice some important potential advantages of the system of regulated private enterprise as compared with public ownership. The independent private management, given unequivocal responsibility for the financial success of an enterprise, can be a powerful influence against pressures of sectional consumer and producer interests for preferential treatment and against the inflation of costs by tendencies such as that formulated in Parkinson's Law. To the extent that commercial responsibility is shifted to government agencies, this influence is weakened. There are recent instances of protected management's advocating internal subsidization of certain customer groups because the losses incurred in serving them could be used as an argument for the continuance of regulatory protection. Similarly, the regulators can be expected to do a better job of interpreting and enforcing antirestrictive and corrective laws if they are not at the same time acting as supermanagers.

Again, insofar as government action can be counted on to prevent or reduce private losses in regulated firms, investment in them is promoted to an uneconomic extent. The case becomes similar to that of the nationalized industries, which cannot in the nature of things compete for capital without a built-in advantage over private firms.

Finally, where commercial loss must ultimately be borne by the taxpayer, as is of course true under public ownership, governmental restriction can be rationalized as a means of "protecting public investment." But this disadvantage is shared by the system of private enterprise to the extent that it becomes respectable to show an equal tenderness for the misfortunes of private shareholders, so that they can successfully claim protection at public expense. Wherever this occurs, private owners will have lost an important part of their economic justification.

THE ECONOMIC PLANNING FUNCTION UNDER PUBLIC REGULATION

By LELAND OLDS
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Introduction. Regulation of electric utilities at its best has failed to accomplish its basic purpose. This failure has been due in large measure to the fact that it has avoided or evaded its essential economic planning function. It has thus left the key to abundant electricity at the lowest possible rates to quasi-monopolistic, privately-owned corporations without incentive to use it—or to the influence of public competition.

The result has been the inevitable vicious circle (perhaps best illustrated by electric rates in New England), which may be simply stated as follows: Rates are high because costs are high because consumption is low because rates are high.

In my discussion of the subject I shall deal primarily with the economic planning function in the regulation of electricity as a public service because that is the field in which I have had the most experience. I shall also be concerned mainly with rates charged residential, farm, and other small users of electricity because, as leading utility executives have testified, rates to big industrial and commercial consumers are fixed largely on a competitive basis.

Failure of Regulation Lays Foundation for Power Policy Changes in Thirties. The failure of regulation, except as aided by actual or potential public competition, to assure the lowest possible electric rates and the most abundant use has been due mainly to a static interpretation of its function. Rate cases have consisted largely in determining whether the profits of last year's limited business represent more or less than a fair return on some rate base. No effective effort has been made to require the best organization of the power supply function in the interest of low-cost power on a regional basis. No corresponding effort has been made to relate rate making to long-range sales objectives, taking account of the rapid decline in unit distribution costs as average use increases. In fact, no effort has been made to promote rationalization in this key industry.

As far back as 1925, Morris Llewellyn Cooke, reporting as director of the Pennsylvania Giant Power Survey to Governor Gifford Pinchot, said that "regulation must be administered so that economy and efficiency in the conduct of these great utility properties may be both

encouraged and required," that rates should be based not on what the service costs but on what it should cost, and that at present it "affords almost no incentive to efficiency." Twelve years later, with the new yardstick development in federal power policy very much in mind, two well-known economists said the same thing at an American Society of Civil Engineers' symposium on power costs.

Professor B. Alden Thresher, of Massachusetts Institute of Technology, told the symposium that the political controversy over public utilities had obscured the real determinants of the problem, which were technical and economic. These determinants he saw involving on the supply side "cheap and abundant energy flexibly distributed and readily controlled" and on the demand side "marked changes in industrial organization connected with use of cheap power in industry, and even more spectacular changes in social habits as the retail consumer adjusts himself to power in the home." Speaking of the deeper issues involved, he said: "More important than the choice between public and private operation is the choice between a stunted power industry and a well-developed one, economically adjusted to the society in which it operates."

Professor Thresher pointed out further that the failure of regulation to deal with the situation was due to the fact that its concepts are by their very nature static and that its theory of an adequate return on the fair value of the investment is set at naught by the technical and economic changes which characterize the industry. He held this fact largely responsible for the contemporary emphasis on federal power projects, noting that state regulation had always lagged behind the situation with which it sought to grapple, especially since the development of regional interconnections.

Leverett S. Lyon, then vice-president of Brookings Institution, told the symposium that in a competitive field, as contrasted with the monopolistic utility business, the costs of an individual business may have no direct relation to the prices at which it can sell its product; that it does high-cost companies no good to complain that their costs will not permit them to compete profitably; and that, in such a situation, a high-cost manufacturer has no choice but to forget part of his costs, closing his eyes to some of his fixed charges and accepting the fact that his investment was not worth as much as he thought it was.

He then asserted that in the field of power, because it is a natural monopoly, the competitive method of price determination will not apply and that, since a monopoly cannot be trusted to create prices in the public interest, social regulation of rates has been established in every state. He continued: "Since the commissions which have been given the responsibility have no competitive tests they have groped none too happily, in an effort to relate costs to prices."

Dr. Lyon saw "the raising of such issues of costs as these" as introducing "the now much discussed 'yardstick' as a proposed method of determining what prices should be."

The Thirties Saw Many Efforts to Correct Situation and Pointed the Way to Progress. During the thirties the people supported co-ordinated steps to correct the situation created by the failure of regulation to assure abundance of electricity at the lowest possible rates. Some of these steps involved an important element of economic planning which should be adapted to the regulatory process. They include, among others:

1. The New York Power Authority's pioneer distribution cost studies.
2. The Tennessee Valley Authority, Bonneville Power Administration, and Bureau of Reclamation demonstrations of the soundness of operating wholesale power supply as a separate function, providing power for local distribution systems on a standard postage stamp rate basis.
3. Demonstration through these programs of the expansibility of sales based on application of the mass-production and sales principle to electric service, taking account of the rapid reduction in unit distribution costs as average sales increase.
4. The Rural Electrification Administration program, demonstrating the economic feasibility of area-wide rural electric service with farms as potentially large power users.
5. Demonstration of the effectiveness of institutional competition in bringing down rates and costs claimed by private power companies.
6. The Federal Power Commission's "National Power Survey," with its emphasis on careful planning of new power plants and transmission facilities under federal supervision as required for the safety and welfare of the nation.
7. Development of the dynamic possibilities of Federal Power Commission statistics in providing tools for simulating yardstick competition in the electrical industry.

The *Electrical World,* trade journal of the power industry, interpreted the true significance of these developments in an editorial in its issue of June 25, 1943, just ten years after the Tennessee Valley Authority was established. The editorial suggested that the electrical industry must substitute the concept of competition for the outlook of monopoly if the opportunity of private enterprise in the business is to be preserved. It said:

> In a competitive business, there is the same eagerness to secure a fair return on invested capital, but the approach is different. Return in competitive business comes from expansion of sales—from volume.
>
> In a competitive business one does not start with a rate that will produce a return and struggle to build business at that price. Just the opposite, one sets a goal and then finds out what price is necessary to reach that figure. The costs are adjusted to make the price bring a return on the estimated volume.

What is the difference? Just this, that growth under the monopolistic concept is necessarily slower than under the competitive concept. Rates in one case are protective of investment, while in the other, they are volume creative. . . .[1]

Regulation Must Foster the Mass-Production Industry Approach. What the *Electrical World* editorial calls for is essentially the mass-production industry approach to providing consumers with an abundance of electricity at the lowest possible cost. The mass-production industry approach must be applied to the two functional subdivisions of the electric power industry separately: wholesale power supply and distribution.

This had already been set forth with great clarity in the annual report of the Tennessee Valley Authority for the fiscal year ended June 30, 1936. The Authority made a further point of great importance in any consideration of the economic planning function under regulation. It noted that "studies of successful mass-production operations indicated that ability to produce in mass usually had to precede consumption in mass." It added that, as applied to the Tennessee region, "this meant that any power producer, whether public or private, must assure an abundant flow of electricity at a low retail rate before any great expansion of use of electricity could be expected."

Regulation to succeed—and on its success depends in large measure the future of private enterprise in the electric power business—must adopt the same general outlook, planning the future of electric service for its jurisdictional area in the same manner as the Tennessee Valley Authority; i.e., on a mass-production, mass-consumption basis.

Application of the Economic Planning Function Will Modernize Regulation. In a real sense, regulation of privately-owned electric utilities will remain a permanent factor in the country's power economy only as it draws upon the experience of the last thirty years. It must revise its whole mechanism so as to participate actively in the planning necessary to assure the abundance and economy of power supply required by our expanding civilization.

Such economic planning under regulation will fall into two broad subdivisions. The first will emphasize the mass-production portion of the business, and because of the far-flung nature of the regional combinations involved will be chiefly the responsibility of the federal government. The second will emphasize the mass-consumption portion of the business, and because of its local character will be chiefly the responsibility of state regulatory agencies.

In this connection, it is important to note that the privately-owned

[1] For an excellent example of the monopolistic approach, see the paper presented at the 1955 National Power Use Workshop of the Inter-Industry Farm Electric Utilization Council by Edwin Vennard, then president of the Middle West Service Co. and now managing director of Edison Electric Institute.

segment of the power industry has recently come out for joint ownership of large modern generating stations and interconnecting transmission facilities. In fact, its representatives, including the president of the Edison Electric Institute, came before the 1956 Congress in support of the so-called "Potter-Pastore bill" which, in its initial draft, was designed to exempt from Securities and Exchange Commission jurisdiction under the Holding Company Act companies undertaking such joint ownership.

The company representatives testified (1) that technical advances in both the generation and transmission of electricity now require the building of single generator units of 325,000 kilowatts[2] and transmission of 1,250,000 kilowatts of power over a double circuit line; (2) that logical extensions of technical progress in the industry include group planning, power pooling contracts, and joint ownership of generating plants; (3) that by joint ownership of generating plants, utility companies, even large ones, but particularly medium and smaller-sized companies, can obtain for their customers the economies of large-scale power production at points where fuel prices and other power production factors are most favorable; and (4) that such jointly-owned wholesale power supply could be financed on the basis of 85 per cent debt and 15 per cent equity; thus making possible great savings in cost.

In terms of the subject I am discussing today, the urgent matter, so far as the wholesale power supply function is concerned, is not so much that of freeing companies joining to own generating stations from regulation under the Holding Company Act. It is, rather, that of providing the new framework of federal regulatory law under which, in terms of planning, operation, and utility responsibility, such systems will fully serve the public interest in ample supplies of low-cost power. For this, federal regulation will have to undertake economic planning in a big way.

Regulatory Planning for Ample Wholesale Power Supply Available to All Distribution Systems at Low Cost. A glance at what the nation faces in the way of power requirements within the next twelve years suggests the weight of planning responsibility in which government must share. In very brief, in terms of electric energy provided by both the utility industry and industrial plants, conservative estimates place the need by 1970 at nearly two trillion (two million million) kilowatt-hours—more than two and one-half times the electric energy which will have been produced in 1957. Without taking account of the need for replacing obsolete plants, this will require the construction of the equivalent of 250 new one-million-kilowatt steam-electric stations. To meet this wholesale power supply challenge with the greatest economy will

[2] American Gas & Electric Co. is actually going forward with single units of 450,000 kilowatts.

require the planned separation of the wholesale power supply and distribution functions in the electric business.

A sound program will lodge the wholesale power supply function in regional power supply grids, fed by great thermal generating stations, strategically located in terms of fuel and water supply, and by hydroelectric stations constructed and operated mainly as parts of federal river-basin programs. A graphic preview of the kind of modern regional power supply setup which should result is found in "A Study of Future Power Transmission for the West," issued by the Bureau of Reclamation in 1952. This study presents the concept of a 500,000-volt power system combining the water powers of the region's rivers with giant steam generation based on its huge fuel reserves to create an ever expanding reservoir of low-cost power to meet the needs of the people.

Such regional systems can be set up as essentially nonprofit private corporations, jointly owned by the local electric utilities served and financed mainly with bonds. They must have utility responsibility for keeping capacity constantly ahead of the requirements of the distribution systems, and for supplying all such systems, without regard to ownership, at standard "postage stamp" rates. Provision should be made, under contract or otherwise, for integrating usable existing generating plants of participating systems into the grid operation.

To accomplish this purpose will require federal legislation establishing what I shall term, for the purposes of this paper, a Federal Wholesale Power Supply Commission with authority (1) to develop plans for the sound integration of the nation's power supply under perhaps four or five regional systems; (2) to keep plans for additional capacity current in terms of long-range forecasts of regional and national requirements; (3) to encourage the formation by local electric utilities of regional wholesale power corporations to carry out the regional plans and, on application, to issue federal charters for such corporations; (4) in case of failure of local distribution systems in any region to establish such jointly-owned systems, to submit to Congress plans for establishment of a federal wholesale power supply system for that region; (5) to regulate such regional wholesale power supply corporations; and (6) to co-operate with existing federal agencies responsible for the planning, construction, and operation of comprehensive river-basin programs in assuring the optimum use of the country's hydroelectric resources as integral parts of the regional power supply programs.

Regulatory Planning for Mass Consumption of Electricity. Separation of the wholesale and retail functions in the power business will afford state regulatory bodies the opportunity to regulate rates charged ultimate consumers in terms of the larger use objectives consistently

written into laws governing the marketing of power from federal river-basin programs. This will require revision of state regulatory procedure to embrace long-range planning of distribution system expansion, combined with unit cost analysis as a basis for rate schedule formulation. And I should note here that the larger distribution systems will include subtransmission as well as distribution facilities.

The new rate-fixing procedure will include preparation by the commission of a preliminary report based on present costs, trended to reflect the requirements of average use for the class of service involved of six to eight times the present level and including tentative rate schedule recommendations; preparation by the company of long-range engineering and financial plans, geared to the same larger consumption objective, to be cross-checked with the commission's trend study; and final decision on rates based on the foregoing. The preparation of the commission's preliminary report may be briefly summarized as follows:

First, the commission will establish long-range average consumption objectives for the class of service for which rate schedules are to be formulated. Such objectives for farm and home use would be in terms of the present concept of all-electric farming and all-electric living, say 30,000 kilowatt-hours and 24,000 kilowatt-hours per year per customer, respectively. This would include wide acceptance of electric space heating and cooling as well as electrification of many farm operations.

Second, the commission will develop from the electric system's previous operations a breakdown of unit costs per customer for present distribution system capacity. The breakdown would be by items which would follow the upward trend of investment and the much more gradual upward trend of management costs. These unit costs will be critically examined in terms of statistical yardsticks derived from the best performance of private and public electric utilities as well as tested by management-engineering standards.

Third, the commission will apply carefully worked out trends to the two cost groups to determine the increases in investment and management costs required to provide service for average consumption levels expanding by 3,000 kilowatt-hour steps until the objective sales level is reached. In developing these trends the commission can take advantage initially of the New York Power Authority's early distribution cost work and of subsequent trend studies based on Rural Electrification Administration data. The long-range engineering and financial studies contemplated by this procedure will make possible a constant improvement of the trends.

Fourth, the commission will combine the distribution costs per customer so determined with the cost of wholesale power supply from the regional wholesale power supply corporation to determine total

cost of serving a customer as average use expands to the objective level. From these figures it will proceed to determination of the incremental cost of service per kilowatt-hour for the various consumption levels and so to the formulation of tentative rate schedules. It will take full advantage of the fact that, as average residential use rises above the 6,000-kilowatt-hour level, incremental cost will stabilize at a small fraction of a cent per kilowatt-hour over the cost of wholesale power supply after taking account of distribution system losses.[3] Revenue estimate tables, which take account of the extent to which average revenue at any consumption level will fall below the bill for that level of use, will be used to determine the revenue which these tentative schedules may be expected to produce.

While the commission study is in process, the company involved will be required to prepare long-range engineering plans for expansion of system capacity to meet the proposed sales objectives. Such plans will no longer be on a five-year basis, geared to projection of present consumption trends which reflect the retarding influence of existing rate levels. Short-range construction plans will, in fact, be made subsequently and kept continually up to date within the long-range plan as a frame of reference; thus eliminating unnecessary costs reflecting overinvestment and obsolescence.

The long-range engineering plans will be expressed in terms of additional substations, replacing of distribution wire, larger transformer capacity, etc., and will include estimates of additional investment required for the most economical expansion of distribution system capacity to meet the sales objective. Intermediate investment levels will also be determined to reflect conditions as system capacity leads the planned growth in use of electricity. Such plans will be subject to check and, if necessary, revision by commission experts, to make sure that they are dynamic in seeking new combinations of facilities which will lower costs and so facilitate the making of rates which will encourage mass consumption of electricity.

On the basis of the commission's cost trend study and the long-range engineering plan, the company will be required to prepare a long-range financial plan which will, in fact, embody a series of annual budgets for operation at various steps in expansion of average use to the objective level. These budgets will be based on managerial judgment as to the requirements of adequate service at these levels, measured in such terms as number of maintenance crews, quantities of materials and

[3] Distribution system investment per home need only double for a fivefold increase in use and triple for a tenfold increase; while except for power use expense, management and other office costs need hardly increase at all as per customer use goes up. Thus total distribution costs may increase only two and one-half times to meet the requirements of a tenfold increase in average farm and home consumption.

supplies, office and sales force, etc. They will also reflect the thought of management on the financing of expansion. As in the case of the engineering plans, they will be subject to critical review by the commission.

When approved, such long-range engineering and financial studies will provide for adjustments, if required, in the cost trends on which the commission has based its tentative rate schedules. It will thus indicate the general reasonableness of the estimated revenue from such rate schedules and so provide for final decision as to the lowest possible rate schedules consistent with the furnishing of satisfactory service. Furthermore, through exchange of the information derived from such studies among commissions throughout the country, a constantly enlarging pool of technical information will be built up directed at lowering the cost of electric service.

Achievement of Important Goals. Thus, economic planning under regulation will separate the function of wholesale power supply from the function of distribution of electricity in order to give full effect to the mass-production and mass-sales principles which have proved successful in American business. And this will not only lead to realization of the essential objective of abundance of power at the lowest possible cost but will aid in the resolution of certain conflicts which are impeding full use of the country's power resources.

Once the principle of unified regional power supply available to all distribution systems at low costs is established, the full development of the country's hydroelectric resources through federal multipurpose river-basin programs, as integral contributions to such supply, can hardly raise the public versus private power argument—at least not with any substantial appeal. And the right of American communities to own their electric service will not be foreclosed by the high cost of local power supply. Finally, the confused and overlapping jurisdictions of federal and state regulation in the industry will be untangled.

In conclusion, I would merely add that in our modern world per capita use of energy, and particularly electrical energy, has proved a highly satisfactory measure of the civilization and living standard enjoyed by any people. In terms of future competition between social systems, our country faces a challenge which can only be met by long-range planning, both for ample supplies of low-cost power and for ample use of this power for all-electric living. If regulation is to play any significant part in the country's effort to meet this challenge, it must revise its procedures to include planning as a principal function.

DISCUSSION

CHARLES S. MORGAN: I disagree completely with much of Professor Adams' paper. Some objections relate to points covered briefly in my comments on Dr. Keyes's paper. Adams' "antitrust" approach to transportation problems leads into error. There is lack of appreciation of the pertinent legislative history and of a thorough understanding of what the Interstate Commerce Commission does. The paper confuses rather than advances our thinking on transportation matters.

Dr. Keyes's discussion of "protective" regulation assumes that the ICC engages in so-called "umbrella" rate making; i.e., that it sometimes arbitrarily raises the rates of one mode of transportation to aid another mode. In her basic illustration, a motor carrier's rates are increased to protect a railroad. This assumption is untrue. Such rate making stands condemned in court and ICC decisions. The converse situation also is untrue: Complaints of carriers of one type that reductions proposed by carriers of another type are unlawful because they would cause the complaining carriers to lose traffic have been dismissed on many occasions as having no standing under the Act.

At this point, I considered how far it was necessary to comment on the reasoning which followed. While some steps are not too clear to me, time is limited and I am not disposed to quarrel with the logic as such.

Though some will find the discussion familiar, I hope it may be helpful if I give, all too briefly, my understanding of the nature of the ICC's protective function. It is not for me, of course, to assume to defend the ICC or the statute. What I say is based solely on the decisions and other published statements of the ICC or its members.

Oversimplification is common in discussions of interagency rate competition. Often an ideal solution, expressible in a single formula, is sought. Such a formula may emphasize direct costs. These costs necessarily are a much greater proportion of total motor than of total rail costs. Fixed costs, be they great or small, are as real, however, as any other to those who must strive to meet them and to justify further capital outlays. Oversimplification causes failure to reflect the public's interest in certain restrictions on deep-seated competitive propensities.

It is true enough that the ICC holds competition in check and thus provides an element of protection to certain carriers or types of carriers. Its actions have drawn criticism. Some economists see a departure from economic principles and need for basic changes in approach. Apparently confident of having more to gain than to lose by stepped-up competition based on relative costs, railroads as an industry have asked Congress for relaxation of rate controls. The Department of Commerce and the National Industrial Traffic League would give this greater freedom larger scope carrierwise. Carriers other than railroads believe the present statute is adequate in this respect and in no need of change. An issue involving great economic interests is presented.

In substance, the ICC endeavors to effect, or allows, such adjustments of

rates as will permit a fair opportunity to compete, provided a mode of transportation less favored in respect of direct costs has a substantial aptitude for rendering a given service. If, however, a means of transportation is ill-adapted to rendering a particular service, it cannot be bolstered up through artificial manipulation of its competitors' rates. Retirements from particular areas of competition have been extensive. More generally, however, no such sharp distinction exists in the aptitudes of the two modes of transportation. The question then arises whether it is in the public interest to apply a cost formula rigidly and force a relatively able competitor out of participation in a given segment of traffic. A small difference in rates, service considered, may suffice to this end. To avoid such a result, the ICC allows both modes, within reason, to compete on an approved or prescribed relationship of rates.

The ICC could not make a rigid use of costs even if it desired to do so. It must respect the right of carriers to compete and recognize other factors. Even piecemeal rate changes may ramify into discriminations and destruction of rate structures on which shippers importantly depend. Four tests normally are applied to a proposed reduction of rates: Will the rates be reasonably compensatory; is the reduction greater than is necessary to meet the competition; will the rates result in undue preference or discrimination; will the reduction and likely subsequent moves by competitors break down a reasonable rate structure? If the proponent meets the burden of proof in these respects, the reductions will be allowed. There are, of course, a great many reductions of this kind. Competition has been given much play and has reduced the amount of "sheltered" traffic drastically, but it has been held within bounds determined to be in the public interest. There is nothing new here. Even the 1887 legislation had as a major purpose the elimination of destructive competition. Procompetitive and protective functions are indivisible parts of a single whole. The ICC recognizes the need for a dynamic, efficient transportation system and shippers' interests in a diversity of services, and also the fact that forces exist which, if unleashed, eventually would destroy competition and leave many shippers and communities wholly dependent upon a single mode of transportation or even a single carrier.

A common criticism is that the low-cost carrier is not always permitted to reap the full benefits of its aptitudes or, in economists' terms, that an economic allocation of resources is frustrated. The critics fail, however, to realize, among other things, the consequences of greater rate-making freedom. The alternative to reasonable restraint is serious disorder. If regulation attempted only to prevent undue discrimination and purely destructive competition, many rates would drift to an out-of-pocket basis and rate relationships would undergo drastic changes, with distressing upheavals in carrier fortunes and locational factors. The ICC could not cope with the resulting mass of discriminatory rate situations. We must live with what we have in transportation and shipper institutions and adapt to changing conditions. We need not apologize, however, to any nation in the matter of transportation resources. Obviously, there have been profound reallocations of these resources in recent decades.

I have not mentioned such complicating factors as group rates, generally recognized as essential, the complexities introduced by variations in the costs

of individual carriers in the competing groups, the difficulty of obtaining meaningful costs, or the effects of railroad deficit operations, and I have not developed the still important role of value of service in distributing the transportation burden.

I am, therefore, one of many who can see no hope for an ideal solution of the problem of adjusting interagency rates. Mere standpatism is not involved here. There may be compromise with strict economic principles but there has been much deliberation by Congress and the ICC over possible alternatives, with regard for carriers' legal rights and existing conditions. The problem goes beyond economics alone. Fortunately, the Act permits the ICC to adjust to changing conditions. Thus, it could give greater emphasis to relative costs as conditions arise that indicate need for so doing.

Very briefly, Mrs. Keyes's discussion of supermanagement greatly understates the extent of carrier freedom in everyday rate making, gives inadequate consideration to responsibilities inherent in regulation, and ascribes expertness peculiarly to management. The discussion of entry control and the opposition to extending regulation fail to grapple with the realities. Note also that, by decreasing the number of justified complaints of discrimination, protective regulation actually reduces what, after all, are modest administrative costs.

While dubious about recasting the rules of rate making in the formulas of theoretical economics, a reading of Mrs. Keyes's paper suggests a multitalent approach. The joint efforts of an economist familiar with analytical techniques, a transportation economist, and a person grounded in rate making could throw light on present policies. Whether, as I now tend to believe, these policies would be confirmed for the most part or changes would be indicated is necessarily a matter for speculation.

Frederic P. Morrissey: My comments will be restricted essentially to Mr. Olds's paper. Mr. Olds proposes some very sweeping changes in the electric utility industry and therefore it may be well to summarize his recommendations. He believes that regulation by state and federal commissions of the electric utility companies has broken down because of a lack of long-range planning and a dynamic approach to rate making. More specifically, regulatory commissions and the regulated companies have not adopted a mass-consumption approach to rate making which follows from very low residential rates; i.e., 5 mills per kilowatt-hour at the terminal block. Costs are excessive because the economies of mass-production have not been introduced. To correct these deficiencies, he would organize the wholesaling function under four or five regional corporations, so that only the most efficient giant generating and transmission techniques will be used, thereby reducing the costs of electric power to enable residential rates and usage (he has little or no concern over industrial users) comparable with the TVA area. The distribution function would be carried out by privately- or municipally-owned utilities—with rigid controls established on the former. He also envisages a super federal commission as a central planning, regulatory, and financing organization. The wholesale function would undoubtedly be relegated to public ownership under Mr. Olds's plan although he does not explicitly state this end. He sees these regional

systems set up as nonprofit private corporations jointly owned by the local distribution units which they serve. On a nonprofit basis, private utility companies participating in this could not raise the many billions of dollars (estimated at 45 billion dollars for the period 1957-70) in the competitive capital market to meet even presently projected requirements let alone Mr. Olds's objective of "all-electric living." Thus the ultimate reliance on public power.

One must ask, is the electric utility industry in the U.S. guilty of inadequate technical progress? There is little or no documentation offered. Mr. Olds relies on his complaint that a great majority of existing generating plants have rated capacities far below the levels required for modern efficiency and economy of production. It seems to me that Mr. Olds is confusing engineering efficiency and economic efficiency. It is not necessary to have the most modern generating facilities throughout to operate at lowest dollar cost. In fact, considering the economics of the electric power industry—the necessity of meeting peak loads provides excess capacity for many hours of the day and many months of the year—reserve capacity in plants twenty or thirty years old may well be the most economical to meet these peaks. Surely Mr. Olds would not indict the electric industry for continued usage of such equipment. But not being an expert on technology, I will have to rely on other experts' opinions, including Mr. Olds's own statement last summer in Montana that the private sector of the electric utility industry is not delinquent in this respect currently. (It should be pointed out that the accolades for such efficiency should not go to the private utilities but to the spur of public ownership, in Mr. Olds's view.) But let us look at the postwar expansion of the private electric utilities—a record which does not prove that the private utilities could not have done better but which hardly suggests restriction of output and lack of a dynamic outlook. From 1946 to 1956, these companies expended on plant and equipment over 22 billion dollars with 15 billion dollars raised in the competitive capital markets to finance new plant and equipment alone; if we add the sale of securities for refunding and divestment, public sale will approximate 19 billion dollars in the eleven-year period, while the profit rate on invested capital has averaged 6.08 per cent for 1946-55. Similarly in these eleven years, privately-owned utilities have expanded capacity from 40 million kilowatts to 91 million kilowatts and kw-h output has jumped from 181 million million to 459 million million. During the same period average residential use per customer of all plants has increased from 1329 to over 3000 kw-h's while the average revenue per kw-h sold by private companies for residential purposes has dropped from 3.22 cents to 2.6 cents. In addition it might be pointed out that the residential electric bill for 250 kw-h consumption is about 20 per cent below the 1935 level despite the increased cost of living and general inflation of prices. This postwar record hardly portrays a static industry.

Compulsory industry rationalization implies centralized control and authority in some government agency or trade group. Mr. Olds would provide an all-powerful Federal Power Supply Commission. In a country as vast as the U.S.A. and living 2,500 miles from Washington, D.C., one may be excused

for holding a jaundiced view of the infallibility of such a central agency. On the question of planning for adequate power supply by a central agency, let me refer to the experience of the Hydro-Electric Power Commission of Ontario—which has had the organizational structure since 1906 that Mr. Olds proposes here today; namely, centralized power supply under a provincial commission and decentralized distribution by the municipalities. Whatever the other merits of the Ontario scheme, and they have been considerable, central planning has not been its forte. Ontario has experienced frequent and substantial power shortages even in peacetime. In 1920-21, 1924, and 1928, power curtailments occurred—all minor when compared to the deficit of supply in post-World War II when water shortages and insufficient peak capacity seriously handicapped industrial operations and inconvenienced domestic consumers. The result was widespread power restrictions, quotas, and cut-offs throughout southern Ontario. In December, 1947, power curtailments reached 386,000 HP (or in excess of 10 per cent of available generating capacity) and in 1948 primary power demands exceeded available resources on practically every working day throughout the year. The Ontario rates were so low relative to coal and fuel oil prices that electric space-heating became feasible—a result which the Commission took drastic steps to stop.

But the Ontario Commission has suffered from excess supply in other years. During 1926-30 large contracts were arranged with several Quebec companies for delivery of 631,000 HP. As these supplies became available at various delivery dates they were not required, large surpluses developed and continued payment would have threatened bankruptcy of the Ontario Commission. The Attorney General of Ontario declared these contracts illegal and unenforceable, claiming the Commission did not have authority to bind the municipalities by such contracts. Several years later, as power demands increased, these contracts were renewed at rates more favorable to Ontario. Central planning has left much to be desired in this case.

I want to add a word of comment about Mr. Olds's assumption of usage of electricity—based entirely on TVA experience. Clearly TVA rates have shown that residential kilowatt-hour usage can be increased to twice the national average if it is actively promoted by electric space-heating and air conditioning installation at 4 or 5 mills and 7 mills per kw-h and favorable temperature conditions. Such average usage of 6,000 kw-h (let alone the 10,000-20,000 kw-h projections quoted) has not been achieved in Ontario (4,800 kw-h in 1956) under highly promotional rates and somewhat similar tax free and capital cost benefits seen in TVA. (It might be pointed out that Ontario has not had low-cost gas supplies for heating.) I suggest that in the absence of major technological change in the electric power industry which Mr. Olds does not demonstrate, such low promotional rates can only be achieved by providing tax exemption and new sources of low-cost capital to the private utility segment. But let me submit that for other than space-heating, Mr. Olds has tended to overestimate the role of electricity rates in the residential and rural budget. Electric rates must be coupled with substantial capital outlays for appliances and wiring before consumption can expand. TVA found out in the thirties that despite the very low rates provided, the projected vast increases

in consumption of electricity were stalled until new low-cost equipment was devised and TVA developed extensive "do-it-yourself" training programs to reduce the capital costs necessary for the increased usage of electricity. Perhaps Mr. Olds should proceed one step farther and rationalize the electric appliance, central station equipment, and residential building industry, to reduce the capital costs associated with increased consumption.

The average residential electric bill in 1955 was $77.00 for approximately 3,000 kw-h consumption; yet the capital outlay for appliances and equipment necessary to permit utilization of this electricity can average $2,000-$3,000. The electricity cost does not equal the interest cost of financing or maintenance expense for this necessary equipment. With promotional rate structures generally in use throughout the U.S.A., interest and maintenance expense for additional appliances to increase electric consumption will exceed the marginal costs of electricity used by the householder.

Accordingly, my disagreement with Mr. Olds is major. His proposal has little merit for the electric utility industry at this stage of our economy and I fail to see how it could be applied to transportation, communications, and natural gas as he suggests. Major energy sources include petroleum, coal, gas, and water power and in the near future, technology may provide nuclear and solar sources. It is imperative that any scarce resource—and energy is not a free good—be rationed to the most beneficial uses. Alternative sources and uses must be considered since it is not feasible to consider any product or raw material a free good. It appears to me that much more will be accomplished by continuously expanding and revising studies on our energy base such as the Paley Committee initiated. Such studies would be wide in scope and would include technology, cost, availability of supply and demand aspects of our energy base. The results of such studies could be widely disseminated and be available to the utilities and regulatory agencies alike. Preferably I would have these carried out by independent, nonprofit, nongovernmental groups sponsored perhaps by one of the large funds; e.g., Ford Foundation or Resources for the Future, etc. But I do not want to suggest that I believe such studies and planning will provide a panacea for our energy problems. However, such information would fill many of the gaps that exist in our technical knowledge and would provide regulatory commissions and the private utilities some criteria for improving their operations.

SELECTED PAPERS—AMERICAN ECONOMIC ASSOCIATION COMPETITION

PRODUCT DIFFERENTIATION AND STRAIGHT-LINE INDIFFERENCE CURVES*

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I. *The Hypothesis*

A significant characteristic of most markets is that the commodity being exchanged is differentiated. A differentiated commodity is one where consumers distinguish among its component parts, which are called products in this note.[1] The tendency for entrepreneurs to differentiate their products has been intensified in recent years, extending even to segments of agriculture that have historically produced a homogeneous commodity.[2] This empirical phenomenon has been reflected in economic theory, notably by Professor Chamberlin.[3] However, the concept of a differentiated commodity is normally treated qualitatively rather than quantitatively. This deprives the analysis of monopolistic competition (a market classification dependent upon product differentiation) of that preciseness and exactness that characterize the study of markets in which homogeneous commodities are sold.

An attempt to improve this situation has been made by the present writer in a previous short note.[4] The hypothesis advanced in that note was as follows:

1. Many differentiated products are designed to meet the same consumer need.

2. Consumers (considered here, as in the remainder of the note, as either individuals or family buying units) can distinguish among such products and will have preferences among them. Since tastes vary, these preferences will vary among consumers.

3. However, since the products satisfy identical needs, the degree

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[1] See, for example: E. H. Chamberlin, *The Theory of Monopolistic Competition* (7th ed.; Harvard University Press, 1956), pp. 56-70.

[2] For example: W. A. Lee, "Merchandising Potatoes in Retail Stores," *Pennsylvania Agricultural Experiment Station Progress Report 142.*

[3] E. H. Chamberlin, *op. cit.*

[4] See my "A Note on the Definition of a Commodity," *S. Econ. J.*, July, 1956, pp. 80-82.

of preference for many consumers will not vary as the relative quantity of the products is altered. The degree of preference for these consumers is measured by their marginal rate of substitution between the products. Each of these consumers has a constant marginal rate of substitution between the products, so that his indifference map for the differentiated products consists of straight lines. The slopes of these linear functions (i.e., the marginal rates of substitution) will vary among the consumers, reflecting differences in preferences.

4. This condition provides the basis for a precise definition of a commodity. The elasticity of substitution (defined as the relative change in the ratio of the amounts of the products divided by the relative change in the marginal rate of substitution) will approach a value of minus infinity for a linear indifference curve, regardless of its slope.[5] Therefore, if the modal elasticity of substitution for any two products is minus infinity, the two products are said to be parts of the same commodity.[6] A commodity, then, is a group of products related by modal elasticities of substitution of minus infinity.

This definition applies equally well to either homogeneous or differentiated commodities. In the case of homogeneous commodities the consumers do not distinguish among the various component products; so the linear indifference functions for these products will have identical slopes. However, it is the first condition—the linearity of the indifference curves—that makes the group of products a commodity by our definition, for it is this characteristic that results in an elasticity of substitution of minus infinity. The second condition—the identity of slopes—simply indicates a special case where consumer preferences are identical. The classical definition of a commodity was dependent upon this last characteristic and was limited thereby in its application. The same degree of precision can be retained by defining a commodity in terms of the linearity characteristic; thus increasing the scope and usefulness of the concept without sacrificing the exactness necessary for scientific inquiry.

The purpose of this note is to test this hypothesis regarding consumer behavior and to develop measures for the degree of consumer preferences and for product differentiation.

II. *The Proposed Test*

To test the linearity hypothesis, it is proposed that the pattern of consumer behavior implied by the hypothesis be derived. If empirical

[5] J. Robinson, *The Economics of Imperfect Competition* (London: Macmillan, 1950).

[6] Previously the substitution flexibility had been used so that the arithmetic mean could be employed as a measure of central tendency without being distorted by values of infinity. However, if the mode or median is used as an average, this is no longer a consideration and the more common elasticity concept may be used.

observation of consumers of differentiated commodities is not consistent with the derived pattern, the hypothesis would be rejected. If the empirical data are consistent with the derived pattern, the hypothesis would not be rejected.

Let us outline the expected behavior of consumers with linear indifference curves between two differentiated products, x and y. Those consumers whose marginal rates of substitution of product y for product x have an absolute value in excess of the ratio of the price of x divided by the price of y will buy product x exclusively. Those consumers whose marginal rates of substitution have an absolute value less than the ratio of the prices will buy product y exclusively.

If the ratio of the prices is equal to the absolute value of the marginal rate of substitution of some consumers, they will be indifferent among these alternatives: (1) exclusive purchase of y; (2) exclusive purchase of x; (3) the purchase of some combination of the two products. A slight change in the ratio of the prices will cause these consumers to shift to the exclusive purchase of one of the products.

A change in the ratio of the prices will cause some consumers to shift from the exclusive purchase of one product to the exclusive purchase of the other product. These will be the consumers whose marginal rates of substitution have absolute values that fall within the range of the original and the new relative prices. Occasionally a consumer may buy a combination of differentiated products to gain information about their relative merits.

Thus we can be reasonably specific about the expected behavior of consumers with linear indifference functions. This behavior differs significantly from that of consumers with convex indifference curves. If the consumer has convex indifference curves, he will buy some combination of the commodities under consideration, and will continue to buy some combination of the commodities as their relative price changes.

III. *The Proposed Measures*

If consumer behavior is consistent with the hypothesis, there would seem to be a basis for quantitative description of preferences among differentiated products. That is, if consumers' indifference curves are linear, they are adequately described by their slopes—the constant marginal rates of substitution. In economics it seldom appears reasonable to suppose that an empirical relationship is linear, and we should be remiss if we did not take numerical advantage of the few exceptions that come our way. In the case of estimating the consumers' marginal rates of substitution between two differentiated products, this could best be done from the products' price and quantity data. The

data should be collected over a period of time so short that it would be unlikely that the tastes of many consumers would change. If the relative price of the products changed frequently during this period and consumers responded by shifting from the exclusive purchase of one product to the exclusive purchase of the other product, then the marginal rates of substitution of those consumers could be estimated. For example, if a consumer bought product x exclusively when the price ratio between x and product y had a value of 1, but shifted and bought product y exclusively when the price ratio increased to 1.2, we could conclude that the consumer's marginal rate of substitution of y for x had an absolute value within the range 1-1.2. If we had a sufficiently large number of such observations we could construct a frequency distribution of the mid-values of the ranges for the individual marginal rates of substitution.

Unfortunately, our data are not in a form to permit such treatment. We have only aggregate reactions to changes in relative prices rather than the response of individual consumers. However, if consumers do not purchase combinations of differentiated products to a significant degree and if there is no significant correlation between the quantity of a commodity a consumer will buy and the consumer's marginal rate of substitution, then the distribution of preferences may be estimated from aggregate data. For example, assume that 80 per cent of a given group of customers purchased product x and 20 per cent of the group purchased product y when the ratio of these products' prices was 1. Say that when the ratio of the price of x to the price of y increased to 1.2, the relative shares of the market changed to 50 per cent for each product, *ceteris paribus*. In view of the above assumptions, we could conclude that 30 per cent of the consumers had marginal rates of substitution of y for x with absolute values in the range 1-1.2. If the relative price shifted often over a brief period of time, it would be possible to derive an approximate distribution of preferences in this manner. It is this method which will be employed in Section VI.

A statistical description of the distribution of estimated marginal rates of substitution should provide coefficients of the degree of preference and of differentiation between the products for the sample group of consumers; that is, some statistical index of the marginal rates of substitution would represent the coefficient of preference. For example, the median marginal rate of substitution between y and x might be 1.3, indicating that a majority of consumers preferred product x. An appropriate measure of dispersion for the distribution would provide a coefficient of differentiation for the two products. For homogeneous commodities the dispersion of preferences would be zero, for con-

sumers would have identical marginal rates of substitution between the various component products. If consumers make only a slight distinction among the products that form a commodity, the measure of dispersion of the marginal rates of substitution would be relatively small. If consumers differentiate strongly among the component parts of a commodity, we would expect considerable dispersion of the marginal rates of substitution and a relatively large coefficient of differentiation. This measure would seem to provide a means for ordering commodities with respect to the degree of differentiation.

The statistical description of the frequency distribution of the marginal rates of substitution poses a problem. In estimating the marginal rate of substitution it is entirely arbitrary whether the ratio is in terms of product y for product x or product x for product y. Thus, it is a matter of chance whether we secure data in the form of the marginal rate of substitution of x for y, or the reciprocal of that variable, which is the marginal rate of substitution of y for x. This characteristic of the data becomes critical when averages or measures of dispersion are compared for two or more commodities. For example, the standard deviation of the marginal rates of substitution may vary greatly, depending upon whether the sequence of substitution is y for x or x for y. Therefore, any ranking of commodities in terms of the standard deviation of preferences might be arbitrary. We require a set of statistical measures that are invariant with respect to the data being in one form or the reciprocal of that form. For an index, either the arithmetic mean of the sum of the arithmetic mean and the reciprocal of the harmonic mean or the arithmetic mean of the sum of the geometric mean and its reciprocal could be used. Let us define the coefficient of preference as the first of these measures, or $\frac{1}{2}\ (\overline{X} + 1/H)$. This is not a measure of central tendency—it may even fall outside the range of values. It is an index of the average strength of preference between the two products under consideration. For the measure of dispersion, the mean deviation of the absolute values of the logarithms of the marginal rates of substitution would seem to be appropriate. Thus the coefficient of differentiation would be:

$$1/n \sum \left| \left| \log mrs \right| - 1/n \sum \left| \log mrs \right| \right|.^{7}$$

The device of using the absolute values of the logarithms of the data has the effect of transforming all the data into values greater than 1, so the measure is invariant with respect to the data being in one

[7] This measure of dispersion is appropriate only if all the data have absolute values less than 1 or greater than 1, as in the sample distributions presented below. If the absolute values are dispersed so that some are less than 1 and some greater, then a different index of dispersion should be used. One possibility would be the difference between the suggested measures of preference, or: $\frac{1}{2}(\overline{X} + 1/H) - \frac{1}{2}(G + 1/G)$.

form or the reciprocal of that form. An array of such mean deviations for various commodities would provide a reliable guide to their relative differentiation. For example, a homogeneous commodity would have a mean deviation of zero, and the measure would vary directly with the dispersion of the data.

IV. *Sources of Data*

There were two basic sources of data: (1) a study by George E. Brandow and H. E. Allison on the competition between butter and margarine in Pittsburgh (Bulletin 528, Agricultural Experiment Station, Pennsylvania State University); (2) data from the Market Research Corporation of America's consumer panel on a standard grocery item. The Brandow-Allison study includes data on the expected responses of 1,296 Pittsburgh families to changes in the relative price of butter and margarine. Each family was asked how it would vary its purchases of these products as the price of butter varied, holding the margarine price constant. This information was collected by interview in June, 1949. The Market Research Corporation of America data were collected from their panel of 5,800 families. About one-fifth of these families normally purchased the commodity under consideration. Price and quantity data for all brands of the standard grocery item (hereafter called the MRCA commodity) were compiled for the second week of eight consecutive months in 1956 and 1957. These data were in aggregate form; they were not collected for individual consumers. Two brands consistently accounted for approximately 80 per cent of the purchases of this commodity. In addition, duplicates were made for all of the individual purchase cards for the second week of February, 1957, and for the second week of April, 1957 (a separate IBM punch card is used for each purchase of a distinct product unit). This provided data on 1,989 purchases by nearly 1,100 families. Approximately 90 per cent of the purchases of this commodity were in multiple units.

V. *The Linearity Test*

Brandow and Allison found that 56 per cent of the families in their sample purchased butter only, 13 per cent of the families purchased margarine only, and 31 per cent of the families purchased both butter and margarine. This would indicate that most consuming units in this market might have straight-line indifference curves between butter and margarine. However, the butter users appeared least responsive to possible changes in the relative price of the two products; so it might be possible that a substantial number of these families would not consider margarine a substitute under any circumstances, at least in the

short run. On the other hand, the steady long-run encroachment of margarine on butter's relative share of the market would seem to indicate that if a family compares the two products, its preference is likely to be independent of the relative amounts of the products held by the family. Also, the 31 per cent of the families that purchased both butter and margarine appeared most responsive to possible changes in relative prices, which would support the view that some of these families had linear indifference curves between these products with slopes that were equal to the products' relative price at the time of the study. The other families in this group probably considered margarine as a substitute for fats and oils other than butter; that is, many cooked with margarine and used butter on the table. However, since a majority of the consumers purchased one product exclusively, it would appear likely that, in the Pittsburgh market, the modal elasticity of substitution between butter and margarine would be minus infinity, and the two products could be classed as parts of the same commodity.

Of the 1,989 individual purchase cards on the Market Research Corporation item, six pairs were matched for the same families on the same days. In other words, six housewives bought two different brands of the same grocery commodity on the same shopping trip and at the same grocery store. Since these six families represented less than 1 per cent of the number of families that purchased multiple units of this particular item for the period under consideration, it was not considered a significant deviation from the anticipated behavior pattern. There was no common characteristic for these six families: they varied considerably in income, age of housewife, presence of children, and size of city. They all bought slightly more than the average quantity of the item, and two of the families were repeat purchasers for the two selected weeks.

While approximately two-thirds of the families maintained their brand loyalty as the relative prices of the brands shifted, the remainder of the families were quite willing to shift during this period from the exclusive purchase of one brand to the exclusive purchase of another brand, with the exception of the six families discussed above. This was deemed to be sufficient evidence that the modal elasticity of substitution was minus infinity between the two major brands of the commodity. Therefore, both brands could be considered as part of the same commodity according to the above definition.

VI. *Measuring the Coefficients of Preference and Differentiation*

The distributions of the estimated marginal rates of substitution refer only to those consuming units willing to alter their purchases in response to changes in relative prices. The calculated measures may be

understated for this reason, but this appears to be a better approach than the alternative of attempting to approximate the preferences of the families that did not shift. For example, for the MRCA commodity, over half of the consuming units continued to buy one brand even though its price varied from 106 per cent to 138 per cent of the price of its major rival. Now it could be that these families had marginal rates of substitution with absolute values in excess of 1.38. In that event, one would expect the frequency of the marginal rate of substitution measures to increase over the range 1.06-1.38, since the modal value presumably would exceed the upper limit of this range. This was not the case. The estimated absolute values of the marginal rates of substitution of the families that changed brands formed a fairly symmetrical distribution over the range 1.06-1.38. The distribution of preferences between butter and margarine had the same characteristic.

This would tend to support the view that those families that changed brands in response to a change in relative price were the families that had compared the two brands; in other words, they had formed an indifference map. Many of the families that did not shift presumably had not made a comparison of the two brands. They had not formed an indifference map for them; thus making it impossible to estimate their marginal rates of substitution. Most purchases of items that are bought frequently are habitual; the consumer economizes on decision making in this manner. For a brief period of time it is probable that only a minority of customers consider the alternatives to the purchase of a specific product. It is the preferences of this group which we will attempt to estimate. Table 1 presents the percentage distribution of families that shifted between the two major brands of the MRCA commodity as the relative price of these brands changed.

TABLE 1

Estimated Marginal Rate of Substitution	Percentage of Families That Shifted	Percentage Divided by Class Interval
1.06 up to 1.14	.2	2.5
1.14 up to 1.16	.9	45.0
1.16 up to 1.23	6.0	85.7
1.23 up to 1.30	4.3	61.4
1.30 up to 1.38	4.0	50.0

The column on the right gives a more accurate picture of the shape of the distribution, since the class intervals are unequal. The coefficient of preference for these two products is 1.03; the coefficient of differentiation for the two products is .0199.

Table 2 presents the percentage distribution of families that would shift between butter and margarine as the relative price of these prod-

ucts changed. These data are derived from a graph by Brandow and Allison showing the response of families in the $100-$119 per week income range to changes in the relative price of the products. It should be emphasized again that these inferences are based on the assumptions that there is no correlation between preferences and quantity consumed, and that preferences are constant for each consumer.

TABLE 2

Estimated Marginal Rates of Substitution	Percentage of Families That Shifted
1.14 up to 1.46	3.0
1.46 up to 1.78	4.0
1.78 up to 2.10	6.0
2.10 up to 2.42	14.0
2.42 up to 2.74	10.0
2.74 up to 3.06	8.0

The coefficient of preference for these two products is 1.37; the coefficient of differentiation for the two products is .0721.

These calculations would indicate that, assuming the two sample groups are roughly comparable in tastes:

1. The preference for butter over margarine was stronger than the preference between the major brands of the MRCA commodity. This is indicated by the respective coefficients of preference, 1.37 and 1.03. For most homogeneous commodities this measure would be 1.

2. The consumers felt that butter and margarine are differentiated to a greater degree than were the two major brands of the MRCA commodity. This is indicated by the respective coefficients of differentiation, .0721 and .0199. For a homogeneous commodity this measure would be zero.

VII. *Conclusion*

The objective of this note was to test the hypothesis that consumers may have linear indifference curves between differentiated products and to develop measures for the degree of consumer preference and product differentiation. Although the data were not in a form to permit precise statistical tests, the available evidence would seem to support the hypothesis. The examples developed for the proposed measures produced results that appeared reasonable. Therefore, further and more stringent empirical investigation would seem warranted.

These concepts, if sound, might be of some constructive use in the discipline of economics. For example:

1. Given estimates of the coefficients of preference and differentiation, it would be possible to predict the shares of the market for differentiated products as their relative prices changed, assuming that something was known of the shape of the distributions of preferences.

2. The mean marginal rate of substitution may be the only variable necessary to relate the demand functions for various differentiated products. That is, if the quantity of x sold is a function of its price, the price of the differentiated substitute y, and the incomes of consumers, then the quantity sold of y may be a function of the same variables, plus the mean marginal rate of substitution between the two products. This might be one means of deriving a market demand curve for a differentiated commodity.

3. The analysis of monopolistic competition may be made somewhat more precise by the use of these concepts. For example, a firm producing a differentiated product in an industry characterized by easy entry will have an average revenue schedule that is functionally related to the distribution of preferences in that market. Entry into the industry may be defined as the production of a new product that consumers are willing to exchange at constant rates with the other products.

JOINT SUBSIDIARIES IN THE IRON AND STEEL INDUSTRY*

By DANIEL R. FUSFELD
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"Abraham begat Isaac; and Isaac begat Jacob; and Jacob begat Judah and his brethren. . . ."—MATTHEW 1:2

The corporate device of joint subsidiaries[1] has been used by a number of large corporations in recent years, especially in enterprises that require large amounts of capital, use a technology with which a single parent company might be unfamiliar, or penetrate new markets. It may develop into an important form of business enterprise in a growing and changing economy, as even large firms reach out for capital and technics that they themselves do not have. In the process, important questions of antitrust policy and the place of big business in the American economy will be raised.

Joint subsidiaries of large corporations have never been subjected to intensive study. There is little knowledge of their number, the areas of the economy in which they are to be found, and their economic significance. Even the many volumes of hearings and reports of the Temporary National Economic Committee offer little on the subject, and reports of the Federal Trade Commission have largely ignored it, with the exception of the Commission's list of "1000 Large Manufacturing Companies" published in 1951, which is unfortunately not complete.

One reason for the lack of any comprehensive study of joint subsidiaries is the great difficulty of getting accurate information about them. The financial reports made to the Securities and Exchange Commission are required to contain information only on subsidiaries in which an interest of about 50 per cent or more is owned. When joint subsidiaries are owned by three or more firms, it is very likely that none of the parent firms will be required to report their ownership interest. In financial statements, joint subsidiaries are included under investments and are usually not listed separately. Some firms do not willingly make public their interests in joint subsidiaries; this is true of some of the larger steel companies.

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[1] A joint subsidiary may be defined as a company in which a majority of the capital stock is owned by two or more parent companies. In practice, most joint subsidiaries are completely "captive" companies: their entire capital stock is owned by the parent companies.

In spite of difficulties it is possible to track down a large number of joint subsidiaries in the iron and steel industry.[2] A list of those identifiable primarily through published sources follows:

TABLE 1

JOINT SUBSIDIARIES IN THE IRON AND STEEL INDUSTRY
As of December 31, 1956

I. INTRA-INDUSTRY JOINT SUBSIDIARIES (53 Companies)

A. Bethlehem Steel—Youngstown Sheet and Tube—Pickands, Mather Group (25)

Balkan Mining Co.: Youngstown (66 2/3%), Steel Co. of Canada (33 1/3%).
Bennett Mining Co.: Youngstown (33 1/3%), Bethlehem (22 2/9%), Interlake Iron Co. (22 2/9%). The remaining 22 2/9% is held by Pittsburgh Steel Co.
Campbell Mining Co.: Youngstown (33 1/3%), Bethlehem (33 1/3%), Interlake (33 1/3%).
Corsica Iron Co.: Bethlehem (66.63%), Interlake (33.37%).
Crete Mining Co.: Youngstown (80%), Interlake (20%).
Cuyuna Ore Co.: Bethlehem (60%), Youngstown (20%), Interlake (20%).
Erie Mining Co.: Bethlehem (45%), Youngstown (35%), Interlake (10%), Steel Co. of Canada (10%).
Hoyt Mining Co.: Bethlehem (45%), Youngstown (20%), Steel Co. of Canada (15%), Interlake (14%), Pickands, Mather (6%).
Huron Land Co.: Bethlehem (45%), Youngstown (35%), Interlake (10%), Steel Co. of Canada (10%).
Iron Range Mining Co.: Bethlehem (33 1/3%), Youngstown (33 1/3%), Interlake 16 2/3%), Steel Co. of Canada (16 2/3%).
Lake Mining Co.: Bethlehem (25%), Youngstown (25%), Interlake (12 1/2%), Steel Co. of Canada (12 1/2%). Inland Steel Corp. owns the remaining 25%.
Mahoning Ore and Steel Co.: Bethlehem (51%), Youngstown (12%). The remaining 37% is owned by United States Steel Corp. (21%), National Steel Corp. (7%), Republic Steel Corp. (6%), and Shenango Furnance Co. (3%).
Mauthe Iron Co.: Youngstown (50%), Interlake (25%), Steel Co. of Canada (25%).
Odanah Iron Co.: Bethlehem (50%), Interlake (50%).
Ontario Iron Co.: Bethlehem (45%), Youngstown (35%), Interlake (10%), Steel Co. of Canada (10%).
Palmer Mining Co.: Interlake (59%), Youngstown (31%), Steel Co. of Canada (10%).
Plymouth Mining Co.: Bethlehem (40%), Youngstown (20%), Steel Co. of Canada (20%), Interlake (10%), Pittsburgh Steel (10%).
Puritan Mining Co.: Bethlehem (50%), Youngstown (50%).
Utica Mining Co.: Bethlehem (33 1/3%), Youngstown (33 1/3%), Interlake (16 2/3%), Steel Co. of Canada (16 2/3%).
Vermillion Mining Co.: Youngstown (52 1/2%), Bethlehem (35%), Interlake (12 1/2%).
Verona Mining Co.: Bethlehem (50%), Interlake (50%).
Western Mining Co.: Interlake (50%), Steel Co. of Canada (50%).
Olga Coal Co.: Youngstown (53%), Interlake (37%), Steel Co. of Canada (10%).
Cambria Steamship Co.: Bethlehem (62%), Youngstown (12%). Not accounted for, 26%. Republic Steel Corp. may have a part interest in this company.
Chicago Short Line Railway Co.: Youngstown (49.9%), Interlake (25%). Other firms and individuals, 25.1%.

B. Cleveland Group (24)

1. Joint subsidiaries managed by Cleveland Cliffs Iron Co.
Arctic Iron Co.: Cleveland Cliffs (50%), Jones and Laughlin (50%).
Athens Iron Mining Co.: Cleveland Cliffs (55.04%), Interlake (41.6%). The remaining 3.36% is owned by individuals.

[2] The chief sources of information used in this study were the following: annual reports of the steel companies, 1950-56; reports by steel companies filed with the Securities and Exchange Commission (Form 10-K); *Moody's Manual of Investments, 1945-56; Steel-Acquisitions, Mergers and Expansion of 12 Major Companies, 1900-1950,* Hearings before the Select Committee on Small Business, House of Representatives, 81st Cong., 2nd Sess. (1950). These sources were supplemented by trade journals, particularly *Iron Age, Steel, Engineering and Mining Journal, Mining Engineering,* and *Canadian Mining Journal;* the *1956 Mining Directory Issue* of the *Bulletin of the University of Minnesota* (Univ. of Minnesota Press, 1956); *The Financial Post Survey of Mines,* 1957 (Maclean-Hunter, Montreal, 1957), and *Canadian Mines Handbook, 1955* (Northern Miner Press, Toronto, 1955). The Research Department, United Steelworkers of America, also provided important information. Where full information was not obtained an effort was made to fill the gaps by correspondence with the parent companies: some were fully co-operative and a few refused information. In the descriptions of joint subsidiaries that follow, footnotes indicating sources of information have been omitted. Information on any one joint subsidiary was usually obtained from several sources, and to cite each one would have inflicted footnotes of inordinate length on the reader. Detailed references may be obtained from the author. Only active subsidiaries were included in this study. There are numerous inactive companies and land companies owned jointly by steel firms that were not included.

Humboldt Mining Co.: Cleveland Cliffs (50%), Ford Motor Co. (50%).
Marquette Iron Mining Co.: Cleveland Cliffs (47 1/2%), Inland (20%), Jones and Laughlin (15%), Wheeling (10%), International Harvester (7 1/2%).
Mesaba-Cliffs Mining Co.: Cleveland Cliffs (32.2%), Wheeling (15.2%), Inland (14.2%), National (11.7%), Jones and Laughlin (10.7%), Pittsburgh Steel (16%).
Michigan Mineral Land Co.: Cleveland Cliffs (50%), Inland (50%).
Negaunee Mine Co.: Cleveland Cliffs (50%), Bethlehem (50%).

2. M. A. Hanna Co. interests
   a) National Steel Corp. (27.26% owned by M. A. Hanna Co.)
      Donner-Hanna Coke Corp.: National (50%), Republic (50%).
      Mahland Ore Co.: National (50%), Inland (50%).
   b) Companies managed by Hanna Iron Ore Co. (division of National Steel Corp.).
      Hanna Ore Mining Co.: National Steel Corp. (70%), Wheeling (15%), Armco (15%).
      Richmond Iron Co.: National Steel Corp. (66 2/3%), Armco (33 1/3%).
      Susquehanna Ore Co.: National Steel Corp. (25%), Republic (50%), Inland (25%).
   c) Hanna Coal and Ore Corp. (60% owned by M. A. Hanna Co.) participates in the ownership of—
      Consumers Ore Co.: Hanna Coal and Ore (30% of Class A Common), Armco Steel (28% of Class A Common+40% of Class B Common), Inland Steel (30% of Class B Common), Wheeling Steel (30% of Class B Common). Armco's interest was sold January, 1956, to unannounced buyers.
      Douglas Mining Co.: Hanna Coal and Ore (65%), Wheeling (35%).
      Morton Ore Co.: Hanna Coal and Ore (59%), Inland (41%).
      Butler Bros. (78.56% owned by Consumers Ore Co.) manages the following companies:
      Philbin Mining Co.: Butler Bros. (50%), Inland (50%).
      South Agnew Mining Co.: Butler Bros. (40%), Bethlehem (60%).
   d) Pittsburgh Consolidation Coal Co. (35% owned by M. A. Hanna Co.)
      Harmar Coal Co.: Pittsburgh Consolidation (25%), Wheeling (75%).
      Mathies Coal Co.: Pittsburgh Consolidation (33 1/3%), National (33 1/3%), Youngstown (16 2/3%), Steel Co. of Canada (16 2/3%).
   e) Iron Ore Co. of Canada: M. A. Hanna Co. (8 1/3%), Hanna Coal and Ore Corp. (18%), Republic (16 2/3%), National (13 1/3%), Youngstown (6 2/3%), Armco (6 2/3%), Wheeling (5 1/3%), Hollinger Consolidated Gold Mines, Ltd. and subsidiaries (25%). Hanna interests have minority holdings in two of the subsidiaries of Hollinger Consolidated Gold Mines.
3. Joint subsidiaries managed by Oglebay, Norton, and Company (now Oglebay Norton Co.)
   Reserve Mining Co.: Armco (50%), Republic (50%).
   St. James Mining Co.: Bethlehem (75%), Armco (25%).
   Columbia Transportation Co.: Oglebay, Norton holds controlling interest; Armco (11.49%) and Wheeling (8.6%) hold minority interests. Recently merged into Oglebay Norton Co., and now a division of that company.

C. Other Intra-industry Joint Subsidiaries (4)

Snyder Mining Co.: Crucible Steel (50%), Shenango Furnace Co. (50%).
Midland Coke Co.: Crucible Steel (50%), Shenango Furnace Co. (50%).
Orote Iron Co.: Pittsburgh Steel (50%), Pittsburgh Coke and Chemical Co. (50%).
Presque Isle Corp.: Republic (35%), Bethlehem (12 1/2%), National (20%), Youngstown (20%), Jones and Laughlin (12 1/2%).

D. Intra-industry joint subsidiaries about which full information is lacking (5)

Interlake Steamship Co.: Closely affiliated with Pickands, Mather; Youngstown also owns 17.04%.
Carbon Limestone Co.: Youngstown (18 1/3%); other owners not known, although this company known to be a captive company.
Iron Ore Transport Co., Ltd.: M. A. Hanna Co. has an interest; also Youngstown (18%) and Armco (18%).
Volunteer Ore Co.: Youngstown (33 1/3%); other owners not known, although this company is also a captive subsidiary.
Ontario Mining Co.: Youngstown (66 2/3%), Steel Co. of Canada (33 1/3%?).

II. Interindustry Joint Subsidiaries (17 Companies)

Titanium Metal Corp. of America: Allegheny Ludlum Steel Corp. (50%), National Lead Co. (50%) Produces titanium.
Mallory-Sharon Titanium Corp.: Sharon Steel Corp. (50%), P. R. Mallory and Co. (50%). Produces titanium products. Recently merged into Mallory-Sharon Metals Corp.: Sharon Steel Corp. (33 1/3%), P. R. Mallory & Co. (33 1/3%), National Distillers Corp. (33 1/3%).
Rem-Cru Titaniu m, Inc.: Crucible Steel Co. (50%), Remington Arms Co. (50%). Produces titanium. Remington Arms is controlled by E. I. DuPont de Nemours and Co. Now wholly owned by Crucible Steel Co.
Cramet, Inc.: Republic Steel (50%), Crane Co. (50%). Produces titanium sponge.
Cliffs-Dow Chemical Co.: Dow Chemical Co. (66 2/3%), Cleveland Cliffs Iron Co. (33 1/3%). A chemicals producer in Michigan.
Upper Peninsula Generating Co.: Cleveland Cliffs Iron Co. (50%), Upper Peninsula Power Co. (50%). Produces and distributes electric power in northern Michigan.
Tenn-Tex Alloy and Chemical Corp.: Tennessee Products and Chemical Corp. (80%), Armco Steel Corp. (20%). Produces ferroalloys at Houston, Texas. Tennessee Products and Chemical Corp. produces pig iron and is controlled by Merritt-Chapman and Scott Corp. This firm might be classified as an intra-industry joint subsidiary.
Nuclear Metals, Inc.: Allegheny Ludlum Steel Corp. (50%), Arthur D. Little, Inc. (50%). Operates a research laboratory.
Ore Transport, Inc.: American-Hawaiian Steamship Co. (50%) and five steel companies, including Armco Steel (9%), Youngstown Sheet and Tube (9%) and National Steel. Information on the other owners is lacking. American-Hawaiian is one of the shipping companies controlled by Daniel K. Ludwig, the largest American ship owner.
Tankore Corp.: Republic Steel through a wholly-owned subsidiary (50%), States Marine Corp. (50%). A shipping company.
Hurlbut Calcium and Chemical Co.: Inland Steel (50%), F. Hurlbut Co. (50%). A limestone producer.

Vitreco, Inc.: Poor and Co. (60%), Youngstown Sheet and Tube (40%). Prepares metal surfaces for enamel and ceramic coatings.

Vacuum Metals Corp.: Crucible Steel (50%), National Research Corp. (50%). Produces steel for bearings, valve springs and jet engine parts. Now wholly owned by Crucible Steel Co.

Silicon Steels, Inc.: Crucible Steel (50%), Allis-Chalmers Mfg. Co. (50%). Owns facilities for production of special steels.

Continuous Metal Cast Corp.: Allegheny Ludlum Steel (35%), American Metal Co. (10%), Scoville Mfg Co. (10%), Koppers Co. (10%), Mr. Irving Rossi (35%). Interested in a process for continuous casting of metals.

Fretz-Moon Tube Co.: A fabricating firm owned by Republic Steel (50%) and National Supply Co (50%).

A. O. Smith Corp. of Texas: A fabricator of large-diameter steel pipe owned by Armco Steel (50%) and A. O. Smith Corp. (50%).

I

Joint subsidiaries of companies in the iron and steel industry fall into two groups: fifty-three intra-industry enterprises controlled by firms in the industry itself, and seventeen interindustry enterprises controlled jointly by firms in the iron and steel industry and firms in other industries. Altogether, there are seventy joint subsidiaries in which firms in the iron and steel industry have an interest. Table 2 shows the types of business enterprise included.

TABLE 2

JOINT SUBSIDIARIES OF IRON AND STEEL COMPANIES
As of December 31, 1956

Type of Enterprise	Intra-industry	Interindustry
Iron ore mining	43	
Coal mining	4	
Limestone production	1	1
Coke production	2	
Railroad line	1	
Shipping line	2	2
Metal fabricating		6
Titanium production		4
Ferroalloys production		1
Electric power production		1
Chemicals production		1
Research		1
Totals	53	17

In addition, there are five companies about which adequate information is not available but which probably also fall in the category of joint subsidiaries. If they are included, the total for the industry comes to seventy-five.

The major reason for fifty-seven of the joint subsidiaries is backward vertical integration. All of the intra-industry and four of the interindustry joint subsidiaries fall in this category. Diversification and forward integration into fabricating are responsible for the remaining thirteen interindustry joint subsidiaries, but only two of the fabricating companies are significant producers. Companies in the iron and steel industry have not used the joint subsidiary primarily to diversify their operations.

When the fifty-three intra-industry joint subsidiaries are grouped according to ownership, a startling pattern of community of interest is found. Two groupings of large producers emerge, bound together by an interlocking web of joint ownership that encompasses all but three of the intra-industry joint subsidiaries.

The first group comprises Bethlehem Steel Corporation, Youngstown Sheet and Tube Company, Interlake Iron Corporation, Steel Company of Canada, and Pickands, Mather and Company. Together and in varying combinations they control twenty-five joint subsidiaries, of which twenty-two are iron ore mining companies, one is a coal company, one a small shipping company, and one a railroad. The large number of interlocking joint interests that distinguish the Bethlehem—Youngstown—Pickands, Mather group are indicated in Table 3, which shows the number of firms in which each firm has a part interest with each of the other firms in the group.

TABLE 3

BETHLEHEM—YOUNGSTOWN—PICKANDS, MATHER GROUP
NUMBER OF INTERLOCKING RELATIONSHIPS THROUGH JOINT SUBSIDIARIES

	Bethlehem Steel	Youngstown Sheet and Tube	Interlake Iron	Steel Company of Canada	Pickands, Mather	Number of Subsidiaries of the Group in Which an Interest Is Owned
Bethlehem Steel		15	15	8	1	18
Youngstown Sheet and Tube	15		17	12	1	21
Interlake Iron	15	17		12	1	21
Steel Company of Canada	8	12	12		1	13
Pickands, Mather	1	1	1	1		1

Most of the iron mining companies in this group are operated and managed by Pickands, Mather and Company, which also manages iron mines owned solely by Youngstown and Bethlehem. In addition, Pickands, Mather controls Interlake Iron Corporation through ownership of 17.7 per cent of its capital stock and is reputed to hold a small stock interest in Youngstown Sheet and Tube Company.

The second important group of steel companies affiliated through jointly owned subsidiaries centers in Cleveland. It comprises the Cyrus Eaton interests and Cleveland Cliffs Iron Company, the M. A. Hanna Company, National Steel Corporation, Wheeling Steel Corporation, Armco Steel Corporation, Inland Steel Corporation, and Republic Steel Corporation. It also includes two large iron ore producers, Consumers Ore Company and Oglebay, Norton and Company. To a lesser

extent, Jones and Laughlin Steel Corporation is affiliated with this group, and two Eaton-controlled companies, Detroit Steel Corporation and Steep Rock Iron Mines, Ltd., should also be included. In addition, there are important connections between the Cleveland group and the Bethlehem—Youngstown—Pickands, Mather group, especially through joint subsidiaries with Bethlehem Steel and Youngstown Sheet and Tube.

Helping to tie the Cleveland group together are minority stockholding interests of Cleveland Cliffs Iron Company in five of the steel companies in the group. These include a 4.74 per cent interest in Inland Steel Corporation, a 3.17 per cent interest in Wheeling Steel Corporation, a 5.26 per cent interest in Youngstown Sheet and Tube Company, a 2.52 per cent interest in Jones and Laughlin Steel Corporation, and a 3.33 per cent interest in Republic Steel Corporation. These holdings were acquired by Cyrus Eaton during the late twenties and early thirties as a preliminary to a merger that was never accomplished. Cleveland Cliffs Iron Company was the corporate inheritor of these securities.

There are twenty-four joint subsidiaries in the Cleveland group. The web of ownership relations is highly complex, and the group is by no means as tightly knit as the Bethlehem—Youngstown—Pickands, Mather group. Table 4 summarizes the interlocking relationships.

TABLE 4

CLEVELAND GROUP

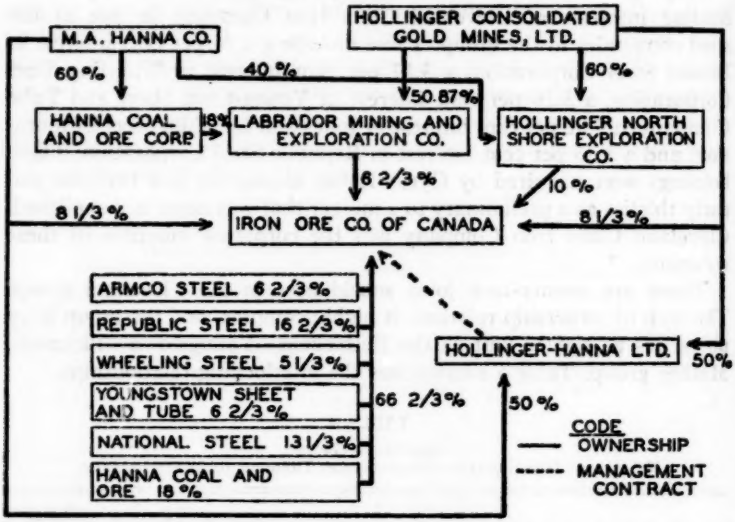
NUMBER OF INTERLOCKING RELATIONSHIPS THROUGH JOINT SUBSIDIARIES

	National Steel	Wheeling Steel	Armco Steel	Inland Steel	Republic Steel	Cleveland Cliffs	Consumers Ore and Butler Bros.	Hanna Coal and Ore	Pittsburgh Consolidation Coal	Jones and Laughlin Steel	Number of Subsidiaries of the Group in Which an Interest Is Owned
National Steel		3	3	3	3	1	0	1	2	1	9
Wheeling Steel	3		4	3	1	2	0	3	1	2	8
Armco Steel	3	4		1	2	0	0	2	0	0	7
Inland Steel	3	3	1		1	3	1	2	0	2	8
Republic Steel	3	1	2	1		0	0	1	0	0	4
Cleveland Cliffs	1	2	0	3	0		0	0	0	3	7
Consumer Ore and Butler Bros.	0	0	0	1	0	0		0	0	0	1
Hanna Coal and Ore	1	3	2	2	1	0	0		0	0	4
Pittsburgh Consolidation Coal	2	1	0	0	0	0	0	0		0	3
Jones and Laughlin Steel	1	2	0	2	0	3	0	0	0		3

Because the Iron Ore Company of Canada is one of the most important of the joint subsidiaries of the Cleveland group and because its complicated ownership pattern has never before been published—indeed, there has been an effort to keep it a secret—I include in Chart I, below, a picture of the interlocking ownerships.

CHART I

OWNERSHIP OF IRON ORE COMPANY OF CANADA



NOTE: M. A. Hanna Company has a 27.26 per cent interest in National Steel Corporation and a 60 per cent interest in Hanna Coal and Ore Corporation.

The ties between the Cleveland group and the Bethlehem—Youngstown—Pickands, Mather group are important. The Bethlehem Pension Trust Fund owns 6.83 per cent of the stock of Cleveland Cliffs Iron Company, which in turn has important interests in five large steel companies. Joint subsidiaries provide other links: Bethlehem Steel has interests in three of the joint subsidiaries of the Cleveland group, Youngstown Sheet and Tube in two, and Interlake Iron Company and Steel Company of Canada in one each. Republic Steel has interests in two of the joint subsidiaries in the Bethlehem—Youngstown—Pickands, Mather group, and Inland Steel has an interest in one. In addition, Presque Isle Corporation, a large Michigan producer of limestone, is owned by Republic Steel, Bethlehem Steel, National Steel, Jones and Laughlin Steel, and Youngstown Sheet and Tube. In some respects

the companies in both groups are bound together into a single web of ownership interests.

The seventeen interindustry joint subsidiaries of steel companies are widely varied. The most important are four devoted to the production of titanium and titanium products. Entry of the steel companies into titanium production is a natural development. Titanium and its alloys combine some of the properties of both steel and aluminum. More important, the rolling mills that fabricate stainless and special steels can be used for the production of rolled titanium products, and some important iron ore deposits contain substantial amounts of titanium. The technology of titanium extraction was developed largely by the United States government, and the metal is finding important uses in jet aircraft, guided missiles, and atomic energy installations. It is a growth industry, with tremendous possibilities for the future. Yet every enterprise engaged in the extraction of titanium from its ores and the production of titanium metal is the offspring of one or more large corporations. Taking the lead are joint subsidiaries of steel companies, paint manufacturers (titanium oxide is the best white pigment), chemical companies (the process of extraction of titanium from its ores is chemical in nature), and metals producers. There has been no place in the industry for new and independent enterprises. One wonders whether joint subsidiaries in the titanium industry provide a pattern for the future: a complex technology pioneered by the government because of defense needs, with production undertaken by subsidiaries of large enterprises that are interested in related processes or products. The capital resources, technological knowledge, and market position of the parent companies may well be sufficient to discourage new firms. The result: dominance of a new industry by existing large firms.

The remaining fourteen interindustry joint subsidiaries show some movement toward diversification: Research, special technological processes, and fabricated steel products are the chief reasons for seven of these companies, although the only ones that produce in significant quantities are Fretz-Moon Tube Company and A. O. Smith Corporation of Texas. The two in which Cleveland Cliffs Iron Company is interested are outgrowths of that company's other operations. The remaining four repeat the pattern of co-operative backward vertical integration characteristic of the intra-industry joint subsidiaries.

II

Some remarks on the significance of joint subsidiaries in the iron and steel industry would not be out of place. It is difficult to limit a joint venture on the part of competitors to the venture alone. Even if

only technical personnel are involved, matters of general interest in the respective businesses will be discussed: "A joint venture between large competitors, regardless of its purpose and regardless of how small it may be in relation to their total business will inevitably result in close association and collaboration between the parties."[3] In the steel industry this problem is compounded by a system of joint subsidiaries in which the parent companies fall into clearly defined interest groups.

The industry is one in which costs of production are heavily influenced by the cost of assembly of raw materials, and when several companies obtain materials from common sources they have a strong basis for common prices. It is difficult to determine exactly how much iron ore the steel companies obtain from joint subsidiaries, but it is known that some, like Bethlehem, produce most of their own requirements; some, like Youngstown, get a large portion from joint subsidiaries; and some, like Wheeling, obtain almost all from joint subsidiaries. In addition to the collaborative aspects of joint subsidiaries, their impact on the operations of the parents must be considered.

More significant, perhaps, is the new light thrown on the structure of the industry. The more than seventy joint subsidiaries is a substantially larger number than heretofore was thought to exist—and there are probably others that this study was not able to discover. The interest groupings into which they fall indicate that we can no longer think of the steel industry as comprising some dozen large and ten smaller integrated producers, dominated through market leadership by United States Steel Corporation. Rather, the structure of the industry that emerges is as follows:

1. A single large producer, United States Steel, which is larger and more diversified than any other single company.

2. Two groups of companies associated through joint subsidiaries, with important ties between them. Each of the two groups has an output capacity approximately as large as that of United States Steel. Taken together, they form a community of interest that dominates the great steel market north of the Ohio and Potomac and east of the Mississippi Rivers.

3. A small group of lesser companies, no one of which produces more than 2½ million tons of steel annually.

If this view is correct, much of our present knowledge of the industry may have to be revised, including our understanding of its pricing policies and market relationships, the policies of individual companies,

[3] Frederick M. Eaton, "Joint Ventures," *Antitrust Law Symposium, Proceedings of the Fourth Annual Meeting, Section on Antitrust Law, New York Bar Association* (New York: Commerce Clearing House, 1952), p. 137.

and the nature of competition in the industry. Its economic history may have to be rewritten in part. And antitrust policy toward the industry may have to be re-examined.

All but one of the antitrust cases involving joint subsidiaries have considered the problem of a single joint venture. Only the Paramount Pictures case[4] took up the question of a system of joint subsidiaries, and the courts held that such a system was illegal if it comprised part of a larger effort to restrain trade and eliminate competition. In the steel industry a pattern of joint subsidiaries is clearly seen, and its effect must be examined further. This is emphasized by the fact that the two chief groups of joint subsidiaries involve parents whose merger has been vigorously opposed by the Department of Justice at one time or another. The joint subsidiaries are quasi-mergers that may have accomplished some of the purposes of the forbidden mergers themselves.

It is evident that further study of joint subsidiaries is needed, both in the iron and steel industry and in the economy as a whole. A federal agency with greater authority than an insignificant college professor is needed for the job in order to pry information from reluctant corporations. In addition, corporations should be required to file with the Securities and Exchange Commission full information on all joint subsidiaries in which they have interests. There may even be need for legislation in this area.

If we are committed to a policy of competition in the American economy, quasi-mergers, like joint subsidiaries, should immediately be suspect, especially when they involve large firms in the same industry. And if we are committed to dispersal of economic power rather than its concentration as an essential element of political democracy, the interest groups that can be fostered by joint subsidiaries should not be tolerated.

[4] *U.S.* v. *Paramount Pictures, Inc., et. al.*, 334 U.S. 131 (1948).

A PARTIAL THEORY OF COLLUSION

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Introduction

Because of the relatively brief time allotted I shall pass over the received theories of oligopoly behavior that bear upon the problems of collusion, cutthroat competition, and merger. Instead, I shall tell as much as I can about my own research. My objectives, today, are threefold. The first goal is to develop a logical theory by which the conditions which produce cutthroat rivalry may be distinguished from those which produce collusion or merger. The second goal is to cast this theory into a form subject to operational test. My immediate goal is to solicit critical examination before attempting empirical work.

Our starting point is the theory of duopoly as developed by Stackelberg in *Marktform und Gleichgewicht*. An extension of his models reveals an interesting relationship between the shape of what may be called the "net industry marginal revenue curve" and the likelihood of profitable mergers. Fundamentally, the kind of curvature of the net industry marginal revenue function determines whether collusion (or full merger) will be more or less profitable than maintaining a leadership position without collusion.

This bald characterization of conclusions immediately suggests important problems. In particular, what specific meaning can be attached to the concept of "net industry demand curve"? The netness refers to net revenue: marginal revenue minus marginal cost. Industry net marginal revenue implies an ability to ascertain both the industry demand curve and the industry marginal cost curve. This is possible, at least in principle, where the products are homogeneous. The marginal costs of the firms may be summed horizontally to find industry marginal costs, and an industry demand curve may be isolated. The problem is more difficult but not insuperable where heterogeneous products are involved. Time limitations preclude discussion of this problem if I am to develop the more novel aspects of my work.

Homogeneous Products

Let us begin by assuming what in actuality we would have to discover statistically: a known industry demand curve. It must be a long-run curve in the sense that it is appropriate to planning changes in the industry structure. It must be known well enough to establish its curvature, if it is to be useful to us.

A statistical curve can relate either to an *ex post* or an *ex ante* relationship. In accordance with our goal, we hypothesize statistical *ex post* curves. Statistical curves drawn from recorded performance provide a test of the present hypothesis regardless of the shape of *ex ante* curves. For it is our contention that attempted mergers will prove to be unstable unless this net marginal revenue curve declines at a decreasing rate; i.e., is convex to the origin. *Ex ante* curves are considered to be not decisive because the present opinions or expectations about the market are presumed to be based upon realities. False notions will probably not survive unless they are consistent with the objective curve. Of course, past relations may differ from future relations and *ex ante* curves may accurately foretell changes in objective conditions.

The decisive marginal costs are again considered to be *ex post*. Marginal costs must also be known. It greatly simplifies the mathematics if we, in effect, eliminate their influence. This is accomplished if we follow the current notion that such curves are horizontal. Horizontal marginal cost curves subtracted from marginal revenue curves have the effect of shifting the position but not the shape of net marginal revenue curves. With equal marginal costs for the two firms, it becomes immaterial whether marginal costs are included or excluded, since they do not affect the shape of net marginal revenue. They are, therefore, excluded in the mathematical footnote below.

Where duopoly with homogeneous products exists, as in the present case, only one price can be charged in any given market. Price uniformity is ubiquitous.

Much attention has been directed to the phenomena of price leadership in the past. I have shown elsewhere that price leadership always involves a virtual financial sacrifice.[1] This is most obvious in the present case of homogeneous products, for if all receive the same price, the firm which assumes responsibility for maintaining the industry price must restrain its output, making marginal cost less than price, while its rivals need not do so. The history of price leadership is largely a history of attempts to force or induce all of the producers to share this burden of output restriction. This fact leads us to the main consideration of this paper. Under what circumstances is it mutually profitable to share the burden of output restriction and under what circumstances is it more profitable for at least one firm to refuse co-operation?

Stackelberg found that price following was always inferior to quantity leadership. Henderson and others have found that the consequences of mutual efforts to follow prices are so unprofitable as to lead to some collusive device resulting in an approximation of the monopolistic price. We accept this conclusion, noting that no such device is avail-

[1] "Why Dominant Firms Decline," *J.P.E.*, Aug., 1957.

able without some method of collusive, or at least mutual, output restriction. Without it, price uniformity will be obtained, but the price will be lower than the monopolistic price. The critical part of the analysis, therefore, turns not upon an analysis of price "bargaining" but rather upon an analysis of the outputs of the firms upon their mutual profits. In the particular case at hand, homogeneous duopoly, both firms must always charge the same price. Since advertising and product policy are excluded by definition, quantity competition is the only competition possible.

Under quantity competition, there are situations where one firm is better off asserting its leadership (if it can) than it would be getting its share of a monopolized market. On the other hand, there are also situations where one firm can pay another more than it is worth and still gain by a merger that yields it its share of a monopolized market. Neither of these is necessarily due to the nature of the firm's, or the industry's, cost curves. Constant (or zero) costs have been assumed in illustrating both situations.

The thesis is simply stated: A tendency toward spontaneous co-ordination, collusion, or mutually beneficial merger will be observed if the "net marginal revenue" curve (the industry marginal revenue curve minus the industry marginal cost curve) declines at a diminishing rate, while active, even cutthroat, competition or truce-like hostile combinations will be observed when the "net marginal revenue" curve declines at an increasing rate.

It is interesting that if the demand curve and supply curves are ascertainable and the price structure (not the level of prices) is stable, the mathematical treatment suggests that the full indifference "maps" of the various rivals can be computed along with such secondary functions as reaction curves, leadership points, and contract curves.

The Dividing-Line Case

A straight-line marginal revenue curve is the dividing line between the cases where mergers are expected and those where sharp rivalry is expected. Under our simplifying assumptions (that there are only two firms in the industry, the marginal costs are constant, and that only one price can obtain in the market at any given time), the various possible divisions of the total quantity sold between duopolists A and B at each price is ascertained, and the profit-indifference curves for the two thus isolated.[2]

[2] The mathematics necessary to derive the dividing-line cases are relatively simple and provide a pattern for the more complex cases. It is presented in full. The more complex proof, which includes this as a special case, takes more space than is available here. The author wishes to thank C. C. Hung for assistance, especially with the mathematics.

This straight-line case can be illustrated, as in Figure 1.

A fairly detailed verbal analysis of Figure 1 may be desirable in developing the conclusions that follow from this analysis.

1. Each indifference curve, only three of which are illustrated, con-

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Let P=price; π=total profit; πA=A's profit; πB=B's profit; x=A's quantity; y=B's quantity; $x+y$=total quantity. $p=a-b(x+y)$ is the industry demand curve, and

$$\pi = P(x+y) = a(x+y) - b(x+y)^2$$

are the total industry profits.

$$\frac{d\pi}{d(x+y)} = a - 2b(x+y) = 0; \qquad x+y = \frac{a}{2b}$$

represents all combinations of x and y yielding maximum industry profits.

A's and B's profit indifference curves are respectively

$$\pi A = Px = ax - bx^2 - bxy$$

$$\pi B = Py = ay - by^2 - bxy$$

Their reaction functions are, therefore,

$$\frac{d\pi A}{dx} = a - 2bx - by = 0 \quad \text{or } x = \frac{a-by}{2b}$$

$$\frac{d\pi B}{dy} = a - 2by - bx = 0 \quad \text{or } y = \frac{a-bx}{2b}$$

(Note that the output of the rival is entered as a constant on the right side of their equations.)

The leadership points are found where the indifference curve of one is tangent to the reaction function of the other, or, for A,

$$\begin{cases} \pi A = ax - bx^2 - bxy \\ a - 2by - bx = 0 \\ 2b\pi A - abx + b^2x^2 = 0; \qquad x = -\dfrac{(-ab) \pm \sqrt{a^2b^2 - 8b^3\pi A}}{2b^2} \end{cases}$$

$$\begin{cases} \pi A = \dfrac{a^2}{8b} \\ x = \dfrac{a}{2b}; \qquad y = \dfrac{a}{4b} \end{cases} \quad \text{Outputs of A and B where A leads.}$$

$$\begin{cases} \pi B = \dfrac{a^2}{8b} \\ y = \dfrac{a}{2b}; \qquad x = \dfrac{a}{4b} \end{cases} \quad \text{Outputs of A and B where B leads.}$$

$$\begin{cases} -bx^2 - bxy + ax = \dfrac{a^2}{8b} \\ -by^2 - bxy + ay = \dfrac{a^2}{8b} \end{cases}$$

$$x = \frac{a}{4b}; \quad y = \frac{a}{4b} \quad x+y = \frac{a}{2b} \quad \text{Output of A and B where they collude.}$$

nects points that yield a particular profit to the relevant firm on the understanding that the total sold by both firms taken together is that

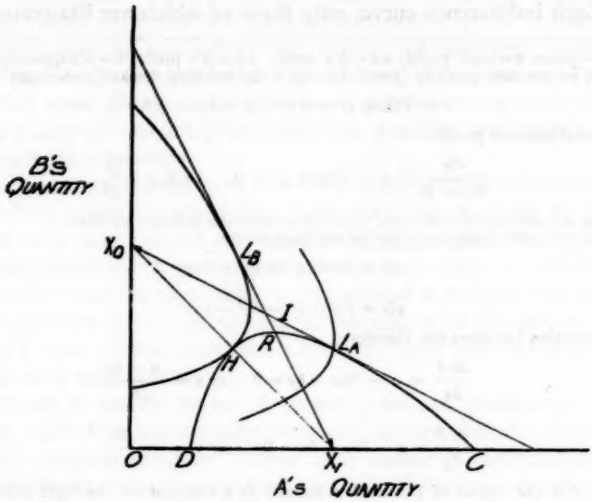

FIGURE 1

indicated by the co-ordinates to that point, that the price is the one indicated by the industry demand curve for that total quantity, and that each firm receives only the income from its own sales. The indifference curves, therefore, have an objective rather than a subjective quality.

2. If the rival produced nothing, the monopoly profit of A is maximized at X_1, and that of B at X_0. Total industry profits are maximized any place along the line X_1 X_0 when both are producing, since marginal costs are equal and constant.[3]

3. The solid black lines tipped with arrowheads pointing at the

[3] If nonconstant costs were admitted, one point on this line would probably represent greater profits than any other, because a particular division of the monopoly output between the firms would probably minimize total costs. Thus, with costs, the location of the *maximum maximorum* depends both upon the economies or diseconomies of scale of the independent plants and also the economies or diseconomies involved in the co-ordination of the formerly independent plants in the event of a merger. No doubt the virtual certainty that actual cost structures will dictate a particular output for each firm if such a *maximum maximorum* is to be reached, is behind Fellner's (and others') insistence that nothing short of full co-ordination, probably by merger or consolidation, can result in maximum industry profits. But certainly the sum of the costs of two independent firms may be quite different from the total costs of the two firms after merger. There may be either economies or diseconomies of management, as well as increased interest by government authorities which may be costly or, less likely, lucrative.

maximum profit possible to the relevant firm are "reaction functions" of the standard Cournot type. They are the loci of the points of maximum profit for each firm for any given quantity that its rival might produce. Geometrically, a reaction function is formed by the successive tangencies of lines parallel to the firm's axis and its indifference curves. While every point on the profit indifference curves of Figure 1 is consistent with possible quantities that the rivals might offer, the points on the reaction function may be of special interest. For if by some feat of enterprising skill A, for example, can induce B to accept a combination in the area $D\ H\ L_A\ C\ X_1$, he can do as well or better than he could if A and B merged. And while any place along the indifference curve $D\ H\ L_A\ C$ is as good for A as any other, only point L_A, being on B's reaction function, is consistent with B's optimum position if B feels that it lacks the resources to force A to change its output policy.

This is not, however, the only possible course open to the disadvantaged rival, B. B could try to punish A by selling more and breaking the industry price. But if its financial resources are relatively meager, it may prefer to avoid the contest since it will clearly hurt itself unless A does respond by reducing his output. B could, on the other hand, attempt to sell less and improve the market price. A would clearly gain by this (since it would be on an indifference curve closer to the peak of its surface at X') but B would lose unless it could persuade A to follow it in selling less at the higher price. Finally, B could offer to merge, and this would be attractive to A (if it fears no antitrust action) if B's plant is valued according to the earnings made while it accepted an inferior market position such as it presently holds. If B, however, insisted on a value comparable to the technical capabilities of his plant, hoping perhaps that some change in market demand might sometime allow him to assume the favored quantity leadership role now played by A, and cognizant of the fact that even in his present unfavorable position he is earning a net revenue, A could not do better than he already is doing in his dominant position. This is shown by the fact that his indifference curve which passes through his leadership point is tangent to the similar curve for B at point H. There, each firm receives one-half of the maximum possible industry net revenue, and in this case, that is precisely what the quantity-leading firm receives. In the present discussion we assume that capital values reflect earnings.

We conclude that there is no overpowering tendency to merge in such circumstances. Nevertheless, if a static situation persists, B may be induced to merge on unfavorable terms, for A can profitably offer more for B's assets than B can realize in a quantity followership position. Moreover, if neither firm secures a dominating position, merger

or co-ordination would appear likely as a means of relief from low prices, while attaining profits as great for both as each might have won by quantity leadership.

While a leadership position may be as satisfactory as merger to the quantity leader, it is not a matter of indifference to the state or to the consumer. At L_A output is larger and price is less than at any place on the contract curve. It is also a larger output than Cournot intersection equilibrium, *I*. In the straight-line case under consideration here, the relationships are precise. The Cournot equilibrium yields an output one-third larger than the monopoly one; the leadership equilibrium yields an output one-half again as large as the monopoly output. There are, of course, corresponding reductions of price below the monopoly price.

The prevention of mergers in these circumstances would seem to be indicated unless more than offset by specific gains in other directions such as greater progressivity or less cyclical instability. Since the drive to secure quantity leadership can be enhanced by superior products, lower costs, and more effective distribution, and since selling costs must pay their way, a priori argument against industry co-ordination of output via mergers, or otherwise, is enhanced.

Peaceful Merger or Spontaneous Co-ordination Case

When the net marginal revenue function declines at a decreasing rate, the functional relationships shown in Figure 1 undergo an interesting shift, illustrated in Figure 2. If costs are thought to be nonexistent or constant, the maximum industry profit line $X_1 X_0$ will again be straight and will imply equal industry profits at all points on the line.

The reaction functions are found to approach the point of maximum profits for the firm at a less acute angle as compared to Figure 1. As the industry net marginal revenue curve becomes more nearly horizontal, the "displacement" of the reaction function becomes more prominent.

Figure 2 illustrates the profit indifference curves for two firms in a specific instance of a net marginal revenue curve convex to the origin. Such a curve would occur if, for example, the industry's marginal revenue curve were convex to the origin and the firms had straight-line marginal costs. Interpreting Figure 2, we see that although a firm may be able to establish quantity leadership, it can do still better by merger even if it must pay as much for its rival's assets as the capitalized income which the rival would receive if it were capable of establishing leadership. This is shown by the fact that the two indifference curves passing through the leadership points of each firm intersect. Thus, assume that A has established leadership so that

the quantities sold are shown by L_A. A can rise from profit curve I to II, while raising B from I′ to II′. This gives B as much as B would get if it were to achieve permanent leadership while A gets even more. Another way of putting it is that by collusion on output, both firms can gain as compared to their most favorable position acting individually. There is, therefore, a strong incentive for collusion or spontaneous co-ordination. A merger, even if accompanied by a considerable issue of watered stock, can still earn a superior return on its stock, water and all. In such a situation, merger is to be expected if collusion is illegal or impolitic. Failing this, tacit agreement and spontaneous co-ordination will be found. Price and output policy will be quite "orderly."

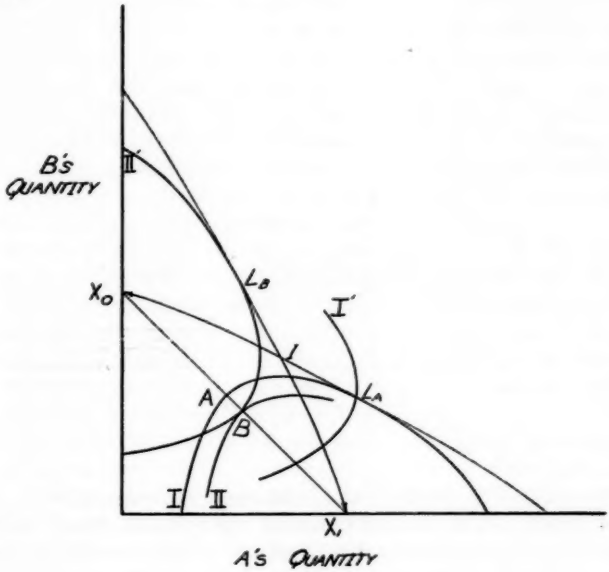

FIGURE 2

The Cutthroat Competition Case

It has sometimes been implied that all industries find themselves in the situation just described—where each firm can improve on its most favorable independent position by participation in a thoroughgoing monopoly scheme. This does not seem to be the case. Figure 3 illustrates a specific case where the net marginal revenue curve declines at an increasing rate. This is not, a priori, as unlikely a situation as might

appear at first glance. If, for example, the marginal revenue curve declines at a constant rate while the sum of the marginal costs rises at an increasing rate, the net effect will be to make the net marginal revenue curve decline at an increasing rate.

In this case, a firm that is able to establish leadership cannot improve its position unless the rival can be convinced of the hopelessness of its position. This is illustrated in Figure 3 by the fact that the indifference curves passing through the leadership points fail to intersect

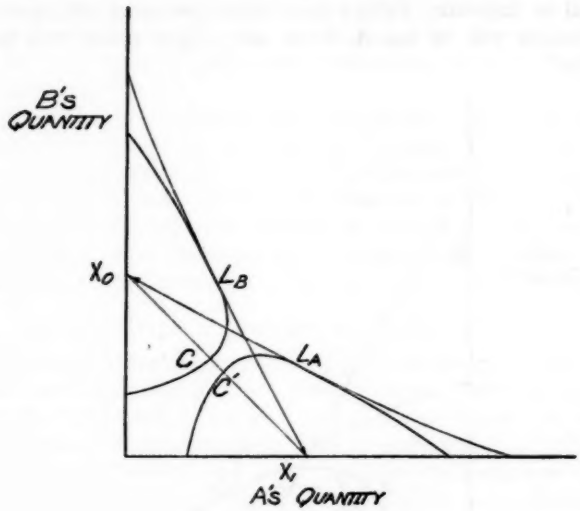

FIGURE 3

or even touch. The gap is $C'C$. Under these circumstances the leader cannot afford to pay the full potential value for the rival's assets as indicated by a capitalized value based on earnings shown by indifference curve $L_B'C$. The profit position of the leader, say A, is better when producing independently than it would be after paying such a price for the rival's assets.[4] If, however, B becomes convinced that A can, by superior toughness, maintain his leadership, so that the best that it can do is to maintain the output shown by LA, B might then sell out for less than the potential value of its assets. Merger then becomes profitable for A and may be superior to the present situation

[4] If there are large economies of scale which can be realized by increasing the size of the firm, the disadvantage of the concave-to-origin net marginal revenue curve might be offset. But Bain's work casts doubt upon the existence of such economies.

for B. But as long as separate firms or semiautonomous separate plants are maintained, rivalry and friction are to be expected.

We conclude that in this case there is a tendency toward independent output policies. They will precipitate price wars and other disorderly market behavior. From time to time some firm will establish output leadership. This will bring a truce. The output leader will not wish to make any change and, for the moment, the rivals are not able to. But these are periods of truce, not peace. Each firm by establishing output dominance can profit more than it can by collusion or merger. A renewal of conflict can, therefore, be anticipated.

It is convenient to have some shorthand designation of the portion of the contract curve which epitomizes the contrasting market situation isolated in the preceding analysis. This portion is illustrated by CC' on Figure 3 and AB on Figure 2, both of which demark the gap between the values of the earnings of the firms on the supposition that both have hopes of achieving quantity dominance. In Figure 3 the gap is "negative" in the sense that it showed that agreement would have to worsen the annual earnings of the leader as compared to those obtainable by securing dominance. The gap AB on Figure 2 is "positive" in the sense that even the leader can gain by collusion or merger as compared with the exercise of individual quantity dominance.

It has often been said that the contract curve delimits the combinations upon which collusive (or bargaining) agreements are likely to fall. This paper suggests that where merger or co-ordination are mutually profitable, the limits are much narrower than the limits of the whole contract curve, and that where merger or co-ordination are not mutually profitable, points along one reaction function or another, especially the leadership points, are not to be overlooked.

But the long-run tendency in all cases appears to be toward the contract curve, especially those short sections of it bounded by the profit indifference curves passing through the leadership points. To distinguish such portions of contract curves from the simple reaction functions of Cournot, Stackelberg, *et al.*, and from the less relevant parts of the contract curve, they may be dubbed "mutual reaction functions," with three subtypes: positive where collusion, co-ordination, or merger is indicated, negative when active competition is suggested, and neutral in the borderline case, associated with a straight-line marginal net revenue curve.

Lack of space precludes presentation of the extension of this analysis to producers of imperfect substitutes.

DISCUSSION

EDWARD H. CHAMBERLIN: Professor Fouraker is concerned with a lack of precision in the definition of a differentiated commodity as compared with a homogeneous commodity and seeks to make the definition more precise by invoking straight-line indifference curves. Granted that any discovery of more precise relationships between differentiated products would be a gain, I am frankly unable to see how the hypothesis of straight-line indifference curves will make any contribution to this desirable objective.

What seems to be contemplated is the discovery of some appreciable number of cases where indifference curves for everyone are linear, but with different slopes for different consumers. There must then be a distribution of the values for these slopes such that a mode emerges. Any departure from linearity would spoil the picture, since the elasticity of substitution between the two products in question would no longer have a single value but would vary with their relative quantities or with the price differential at equilibrium. The definition of a commodity, instead of becoming precise, would then be in a constant state of flux. In the butter and oleomargarine case which Professor Fouraker uses, 31 per cent of the consuming units are in fact found by his own criterion (to be discussed in a moment) to have normally convex curves. This discovery is explained away in a manner which seems quite unsatisfactory to me.

Straight-line indifference curves between two products would mean that the consumer in question did not distinguish between them, either at a one-to-one or at some other ratio. What are the possibilities of finding in real life pairs of products for which even a substantial portion of consumers would have straight-line curves—apart from the homogeneous product case in which we are not interested? Not very many, I think, and these almost necessarily from products which closely approximate homogeneity; so that the criterion would be of not even limited usefulness beyond this range. Brown and white eggs are an example of near-homogeneity, and I confess to being totally indifferent myself as between them, although many Bostonians are supposed to prefer the brown variety. But it seems doubtful to me if a really proper Bostonian would not indulge himself at least occasionally with a properly brown egg, even though the relative cheapness of white eggs might lead him to economize on his friends. Granted that many buyers will be indifferent between certain brands of quite similar commodities, at the same price, it would seem on a priori grounds that when the products are enough different to give rise to a price differential, a straight-line indifference curve would be rare indeed.

Let us turn to the statistical tests proposed by Professor Fouraker. As he says, they would, if met, show that the data are consistent with the hypothesis, and therefore would not in themselves indicate its rejection. But they do not establish it. In other words, they are necessary to it, but not sufficient. This is a matter of importance. Consumers may shift from the exclusive purchase of one product to the exclusive purchase of another for reasons other than straight-line indifference curves, some of which (changes of taste

and economizing on decision making, for instance) he himself mentions but dismisses as unimportant.

Professor Fouraker places heavy reliance on the shift in exclusive purchase from one product to the other at a slight price change as indicating a straight-line curve. In this earlier "Note on the Definition of a Commodity," which is the point of departure for his present paper, he gives a number of examples as indicating such curves. But I think that none of them really does. The purchase of one product exclusively (and even over an indefinite period) is not inconsistent with convex indifference curves, for the straight line expressing the market rate of substitution between two products may easily pass through the point of intersection of the relevant indifference curve with one of the axes. Indeed this must be the most common case of all—only think of all the products that any particular individual does not purchase! And buying cigarettes by the carton or gasoline by the tankful is merely a matter of convenience. It indicates nothing as to the curves, which must embrace some substantial period of time in order to present budget alternatives which are meaningful at all. In the case of a (large) indivisible product—as in the one-car family example—the indifference curve consists merely of two points, one on the Ford axis, the other on the Chevrolet axis, with nothing in between, since fractional cars are ruled out. It is not a straight line. In the example of institutional buyers who buy fleets of cars, all Fords or all Chevrolets, there are presumably economies in using one product alone as against some combination of both. This type of case may be of fairly wide interest, even in the family budget. But here the indifference curve would be concave to the origin. For, if the fleet numbered fifty cars, then all of either kind alone would be preferable to, say, twenty-five of each, so that this latter combination would lie on a lower indifference curve. In both the single-car and the fleet examples, the discontinuous shift in demand at a critical price ratio would take place. What is probably of much greater importance is the fact that in using the proposed test on statistical materials, a movement on the scale of values for the marginal rates of substitution, over any substantial range, as in Professor Fouraker's tables, might show the "discontinuous" shift consistent with convexity of the curve. Conclusions based on this test therefore do not seem to me to indicate very much, if anything, as to straight-line indifference curves.

Professor Worcester's paper addresses itself to an interesting question: the distinction between conditions which produce cutthroat rivalry and those which produce collusion or merger (although both common sense and history suggest that they may not be sharply distinguished, since the very ruinousness of competition may work powerfully towards collusion in order to avoid it). But such a problem makes no sense to me when studied in the totally unrealistic Stackelberg framework, compounded with unrealistic Cournot-type quantity adjustments. Stackelberg "leadership" is to my mind a perfect example of an ingenious, but artificial, concept—unfortunately capable of mathematical formulation and development but unrelated to the economic world in which we live. It is also unrelated to what is ordinarily meant by leadership in the familiar sense of one firm setting a price which is followed

by others, a problem which Stackelberg bars as "illegitimate," but with which his leader-follower analysis is often confused (as it seems to be here).

Stackelberg's pedantic ruling, followed here by Professor Worcester, that since there can be only one price for a homogeneous product in a perfect market we are reduced to Cournot-type quantity adjustments for such a market, is a further element of unreality. In real life, of course, there may be at least momentary or slight price differences in any market, and to allow such differences in the theory, so that prices instead of quantities may be adjusted, presents a totally different problem. (Some of these matters are discussed more fully in my *Monopolistic Competition,* Chapter 3.) In sum, Professor Worcester's paper, however technically proficient, seems to me in its present form to deal with an artificial problem, two major steps removed from reality, and which is hardly worth pursuing empirically.

ALFRED E. KAHN: In commenting on the papers of Professors Fusfeld and Worcester, I am taking the liberty of doing so less in terms of what they contain—about this I have relatively little to say—than in relation to the purposes of the competition out of which they have been selected.

In this respect, they complement each other in a rather curious fashion. The terms of the competition were that preference would be given to papers reporting on "substantive research, and to those of a theoretical nature that make a contribution toward integrating developments in different branches of economics, or . . . social science." The Worcester paper conforms to neither of these preferential criteria. Being essentially deductive, it sets forth an extremely interesting hypothesis; the empirical research is yet to be done. The Fusfeld paper, in contrast, certainly is the result of substantive research: it presents a provocative collection of facts. But it is not clear what hypothesis it was the purpose of the research to test; and we are left only with some intriguing surmises about the significance of the facts proffered. I sincerely intend no reflection on the merits of the two papers when I point out that neither of them constitutes the product of scientific research as I understand the term.

On the other hand, both raise questions that should stimulate additional thought and bona fide research—and that is no small contribution.

I am not going to comment on the internal logic of Professor Worcester's paper but on its external significance. And here, I confess, I find myself at a loss. Its subject is important: economists ought to be trying just as hard to derive supportable generalizations about how market structures evolve dynamically as to elaborate the static implications of given categories of market structures. This was one of the suggestions of the challenging paper Professor Heflebower presented at these meetings four years ago: that markets are constantly changing and developing; that they not only condition business behavior but are themselves changed by it, in an organic process of mutual interaction; and that this process must be explained.

What I remain uncertain about is the importance and usefulness of the particular variable Worcester has selected. First of all, I have a logical reser-

vation about the capacity of a static determinant—the configuration of the net marginal revenue function—to explain a dynamic phenomenon. More important, I have my doubts about its operational usefulness and relevance to the real world that he is trying to explain. I do not say that there is no connection between the determinant he has chosen to emphasize and the different market structures of the real world. He apparently intends to demonstrate such a connection, by examination of the facts, and I am interested to see his results. I only say that I do not readily and fully see the connection, and I wish he had given us some indication of the kind of empirical observations or hunches that induced him to hypothesize one. My own hunches would lead me to emphasize other factors determining the relative likelihood of merger, collusion, imperfect leadership, or destructive competition: economies of scale, the extent of the market, differences in costs of different producers, the relationship of fixed to variable costs, product differentiation, the character of raw material markets, and many others. Some of these are of course indirectly reflected in the Worcester model; I merely have difficulty understanding the relevance and empirical usefulness of his method of organizing them.

In very general outline, I suppose the facts with which Professor Fusfeld has presented us are familiar to students of American industry. But the effect of his bringing them together is striking. I will certainly hesitate henceforth about describing the steel industry as an oligopoly dominated by six to ten large, integrated, but essentially distinct companies; or to concern my students as much as heretofore with the familiar questions about whether the industry's pricing behavior is or could have been the reflection of collusion or of noncollusive oligopoly—questions that seem almost laughably irrelevant in the light of the pervasive web of interlocking controls and relationships Fusfeld has exposed.

It is significant, however, that he terminates his paper with questions rather than answers. What he has done is to present us with a descriptive, not an analytical, account. What analytically significant questions must be answered by research before the facts we have just heard become meaningful? Since the author has already asked many of them, I have few to add. I suppose the main question, that embraces all the others, is how participation in these numerous joint ventures has affected the behavior and performance of the industry. So broad a question hardly lends itself to scientific investigation, especially, as Fusfeld justly suggests, by an academic economist with inadequate access to the relevant facts. More narrowly, does the obvious and glaring absence of U.S. Steel from these lists shed any light on the relations between that company and the rest of the industry? Does the apparent cleft between the two groups explain the widespread complaint in the industry that Big Steel is holding the price umbrella so low these days it is giving them all curvature of the spine? And is this a sign of effective competition? Or would effective competition require higher prices in boom times and lower ones in recession?

Research along these lines, including some of those suggested by the author,

would seem to be necessary if the economist is to give substantive guidance to the framers of public policy with respect to these ventures. The economist will want to investigate the impact on competition of each of them individually, or of all of them together, within the meaning of the Clayton or Sherman Acts. It is in some respects instructive to characterize them as quasi-mergers, as Fusfeld does; but, he would be the first to admit, finding a useful handle does not answer the substantive questions. Both legally and economically, they have important differences from mergers. Though combinations, joint ventures do not usually destroy an independent business entity, but create a new one. In this sense their growth carries a far clearer presumption of social desirability than business growth by simple acquisition.

Most of us would agree, I suppose, with Fusfeld's implicit suggestion that their combined effect has probably been to tighten up the structure of the industry against independent entry and independent competitive decision making. But I wonder how many of us would have much confidence in a simple policy of dissolution and prohibition? Before condemning these combinations as unreasonably restraining trade (and the rule of reason has economic as well as legal significance), we would insist at least on considering what alternative institutions might have done the jobs these companies were set up to do, and how efficiently they would have done them. Such an inquiry might, alternatively, induce a recognition that an essentially administered—indeed, a collectivistic—steel economy is here to stay. In this event, it might suggest the desirability of looking for other strings to our public policy bows, more appropriate than antitrust to an administered economy. However, the questions remain to be answered; the research remains to be done.

AMERICAN ECONOMIC ASSOCIATION

PROCEEDINGS

OF THE

SEVENTIETH ANNUAL MEETING

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PHILADELPHIA, PENNSYLVANIA
DECEMBER 28-30, 1957

PROCEEDINGS OF THE AMERICAN ECONOMIC ASSOCIATION

ANNUAL BUSINESS MEETING, DECEMBER 30, 1957
SHERATON HOTEL, PHILADELPHIA, PENNSYLVANIA

The Seventieth Annual Business Meeting of the Association was called to order in the Penn Ballroom of the Sheraton Hotel at 5:15 P.M. by President M. A. Copeland. The President's opening remarks were presented in the form of an annual report, which is appended as an annex to these minutes.

The minutes of the business meeting of December 29, 1956, were approved as published in the *Papers and Proceedings* and the actions of the 1957 Executive Committee were ratified and the reports of officers and committees were accepted. Minutes and reports are published in the "Proceedings."

A summary of the reports of the Secretary, the Treasurer, and the Finance Committee was presented by J. W. Bell and copies of exhibits of the balance sheet and income account, the investment holdings, and of the Auditor's Report were made available for inspection. The Secretary outlined briefly the problems faced in the administration of the secretarial office during the peak load when the preparation of the 1956 *Directory* was added to the routine operations of the office. He explained that the necessary delays in the appearance of the 1956 *Handbook* (so called to comply with the vagaries of second class mail requirements) made it advisable to start immediately the preparation of a 1957 supplement.

The Association is still in a wholesome financial condition, despite the fact that expenses during the past year increased some $34,000 while the income increased less than $25,000. The deficit of $9,800 can be attributed chiefly to the fact that the members were provided with publications totaling $15, list price, for the $6.00 dues. That the deficit is not larger is accounted for by the fortuitous profits we took on the sale of securities. The Auditor's Report represents the conscientious and efficient efforts of two C.P.A.s for the better part of a work week. These reports were all accepted with a vote of thanks to the Secretary-Treasurer, the members of the Finance Committee, and the Auditor.

Professor B. F. Haley, Managing Editor, reviewed the work of the Editorial Board and of the Office of the *American Economic Review*. He described the results of a questionnaire sent to a select sample of members, which provided significant data for consideration of the Editorial Board. The report of the Managing Editor classifies the content of the *Review* by subject matter, main articles, communications, reviews, and so forth, and contains as well the budget for 1958, which was approved by the Executive Committee.

Because of the limitations of time, reports of selected committees and of the council representatives were not presented, but these are made part

of the "Proceedings." The Secretary described briefly the activities of the Committee on Research and Publications (J. P. Miller, Chairman), calling attention to the availability of the cosponsored publications at privileged rates to members. He reported that grants from the Ford Foundation in the amount of $35,000 and $3,000 have been made for the purpose of preparing a cumulative economic index and a register of economists in economic education. We are working in this latter area in co-operation with the Joint Council on Economic Education, through the Committee on Economic Education (B. W. Lewis, Chairman).

Professor Copeland then called upon Fritz Machlup, who summarized the report of the Committee on Academic Freedom and Civil Liberties. This report, dealing with two academic cases—Professors Sweezy and Davis—is published in full with the committee reports.

The Secretary presented the report of the Committee on Elections and the certification of the election of new officers for the year 1958 as follows:

In accordance with the bylaws on election procedure, I hereby certify the results of the recent balloting and present the reports of the Nominating Committee and the Committee on Elections.

The Nominating Committee, consisting of Eveline M. Burns, Chairman, George H. Hildebrand, Raymond F. Mikesell, Paul M. Sweezy, George W. Terborgh, and Ralph A. Young, presented to the Secretary the list of nominees for the respective offices:

For President

George W. Stocking

For Vice-Presidents	*For Executive Committee*
Martin Bronfenbrenner	Andreas G. Papandreou
Seymour E. Harris	Mabel F. Timlin
Richard A. Lester	James Tobin
George J. Stigler	Dale Yoder

The Committee on Elections, consisting of Yale Brozen, Chairman, Bion B. Howard, and James Washington Bell, prepared biographical sketches of the candidates and ballots were distributed early in November. The canvass of ballots was made on December 16, 1957, and the results were filed with the Secretary.

From the report of the Committee on Elections, I have the following information:

Number of envelopes without names for identification	58
Number received too late	21
Number of defective ballots	—
Number of legal ballots	2,919
Number of returns from the mail ballot	2,998

On the basis of the canvass of the votes cast, I certify that the following persons have been duly elected to the respective offices:

President (for a term of one year)
George W. Stocking
Vice-Presidents (for a term of one year)
Seymour E. Harris
George J. Stigler
Members of the Executive Committee (for a term of three years)
Mabel F. Timlin
James Tobin

The retiring president, M. A. Copeland, presented President-elect G. W. Stocking, who responded with brief remarks of acceptance and expressed

deep appreciation of the honor and asked for help and co-operation of his colleagues in the performance of the duties of his office.

There being no unfinished business, items of new business were called for and the following proposal for an amendment to our Charter and Bylaws was submitted:

Section IV. Duties of Officers. Paragraph 5.
Amend this paragraph to read:

The Editorial Board shall have charge of the publication of the *American Economic Review*. The Managing Editor shall be ex officio member and chairman of the Editorial Board.

Since the proposed revision affecting Section IV, Paragraph 5, merely recognizes what has been the practice over the years, this amendment was approved.

There being no further items of new business, the President called for the report of the Resolutions Committee, which was read by William E. Dunkman and which received unanimous approval. The resolution follows:

Be it resolved that the Association express its thanks and grateful appreciation to:

President Morris Copeland for his generous and untiring personal efforts in planning and executing the program for the annual meeting; James Washington Bell, our Secretary-Treasurer, who as always has served far beyond the call of duty; the members of the Executive Committee and the many other members of the Association who co-operated to create the successful meetings; Karl R. Bopp and Clay J. Anderson, cochairmen of the Local Arrangements Committee, and to Willis J. Winn, Sidney L. Miller, David C. Melnicoff, Edward A. Aff, Paul Miller, Nathaniel Jackendoff who contributed so much in their capacities as subcommittee chairmen; Paul Piersol and the Pennsylvania State Employment Service which rendered an excellent facility; J. A. Livingston and the members of the press who performed effective services; other professional organizations and their local representatives who co-operated so generously; the Philadelphia Convention Bureau and many local firms for generous assistance; the management and staff of the Sheraton Hotel who have eagerly sought to provide for our daily needs and have met them graciously.

Respectfully submitted,

WILLIAM E. DUNKMAN, *Chairman*
PHILIP TAFT
PEDRO TEICHERT

The meeting was adjourned at 6:00 P.M.

JAMES WASHINGTON BELL, *Secretary*

REPORT OF THE PRESIDENT PRESENTED AT THE ANNUAL BUSINESS MEETING

The two Sputniks have stimulated a critical examination of the inadequacies of what we are doing to train physical scientists and engineers and there is quite general agreement on the need for a substantial strengthening of this aspect of our educational system. However, various people who have pressed for such a strengthening have been careful to insist that it ought not to be accomplished at the expense of work in the social sciences and the humanities.

Whatever should be said currently about the humanities and about other branches of social science, for economics this hold-the-line way of putting it is unwarranted complacency. There is need for a critical examination of the inadequacies of what we are doing to train and develop economists and need to remedy these inadequacies. When I say this I am thinking not so much of the number of Ph.D.'s we are turning out each year, though this may soon become a major problem. Nor am I thinking mainly of the seriousness and energy with which the study of economics is being pursued in the United States. Rather I have in mind the kind of economic inquiries that are being encouraged not only at the graduate level but thereafter.

Several years ago I had a discussion with a very able young man who had just received his Ph.D. about two articles he was proposing to write. Both of the articles involved mathematical model analysis. Neither article involved any use of statistics. Neither could in any sense be called a piece of empirical research. I asked the young man whether he did not think it would be more worth while for him to tackle a kind of model analysis that would involve some statistical testing of his models. He agreed. But he said: "Nonempirical model analysis is easier and less time consuming. The quickest way to establish oneself as an economist is to publish nonempirical model analysis articles, particularly articles of a somewhat mathematical nature."

Unfortunately he was quite right. Such purely deductive exercises—F. W. Taussig used to call them intellectual gymnastics—offer young men prompter and surer professional recognition than does any form of empirical research. And purely deductive mathematical model analysis seems to offer a particularly attractive prospect. In fact, I think some people are disposed to feel that if model analysis is mathematical the need for it to be empirical is considerably less urgent, since mathematics is the language of science. No doubt stating a deductive argument mathematically makes the task of stating it more difficult for the majority of economists and hence more worthy of scholarly recognition. But stating it mathematically makes it not one bit less a priori and by itself does nothing to give the conclusions scientific validity.

Several years ago Howard Bowen made a report to the Association on graduate education in economics. One of his recommendations was that "greater attention should be given to achieving a fruitful balance between

theoretical and empirical studies,"[1] I think there is need to push in this direction also at the post-Ph.D. level.

We had an open competition for places on the program this year. It seemed to me desirable to use this competition to encourage the balanced type of contribution that combines the deductive and empirical approaches. In announcing it, therefore, I stated that preference would be given "to papers that report on completed or nearly completed substantive research." But it seemed wise also to encourage that all too rare type of primarily theoretical contribution that cuts across disciplinary lines; and the announcement stated that preference would be given, too, to papers of this kind. I hoped the competition would result mainly in papers of these two types, but it did not succeed in doing so. Oscar Ornati, Secretary of the Committee of Judges, has prepared a report on the competition that reads in part as follows: "Most of the papers were written in the traditional deductive manner and consisted primarily of reformulations of well-known doctrinal positions. Only eight papers reported on new empirical research and only in three cases were the data reported either extensive or important. Four papers made an explicit attempt at integrating empirical data in an analytical framework. Contributions discussing 'developments in the different branches of economics or developments in economics and some other social science,' for which preference was indicated in the competition announcement, were, with one exception, primarily discursive without reference to actual developments . . . . More than anything else these papers reflected the general feeling that an integrated interdisciplinary approach is a 'good thing.' "

Three years ago when Simon Kuznets was president he made an informal survey to find out about inquires in process or just completed, reports on which should be presented as papers at the annual meeting of the Association. I repeated such a survey this year. The form letter I sent out to research institutions and to some forty universities and colleges inquired about "research in process and people engaged in it that would provide papers of high quality for the program for the Economic Association's annual meetings." I can only say that the response from the universities and colleges was very disappointing indeed. There were several research projects reported on, but not very many. There were a great many replies that proposed deductive theorizing that did not cut across disciplinary lines for inclusion in the program.

Both the entries in the competition and the responses to the informal survey indicate a situation which is cause for grave concern. There is something wrong with the incentives under which economists work in the early stages of their careers. I believe the Association ought to undertake a systematic canvass to determine what steps should be taken to change these incentives so as to make studies that are both theoretical and factual more attractive than mere a priori model analysis inquiries.

If the competition is repeated and preference continues to be given as it was this year that should help. But let me make another suggestion. We have

[1] *A.E.R.*, Sept., 1953, sup., p. 4.

two medals designed to encourage high standards of professional performance: the Clark medal for younger, the Walker medal for older men. We have now awarded three Walker medals and every one of them has been given in recognition of the kind of professional contribution we need to encourage. But for the incentives provided younger men, it is the Clark medal that is immediately pertinent. We might have used this award to help to overcome the disadvantage of the laborious and time-consuming type of economic inquiry that combines precise reasoning with empirical investigation and to make it more attractive than most purely deductive theorizing, mathematical or otherwise. We might have done so, but we did not. Three of the five awards—some people would say four—were made for excellence in nonempirical a priori inquiry. But henceforth I think we should insist that most of the awards go to those whose contribution to economics is outstanding in a way that combines deductive reasoning and empirical investigation, and that only occasionally should an award be made for a nonempirical theoretical contribution; i.e., only when there is one of outstanding merit.

Saturday evening I cited the first paragraph in the statement of principles that was incorporated in the original constitution of this Association. I want now to cite the second paragraph: "We believe that political economy as a science is still in an early stage of its development. While we appreciate the work of former economists, we look not so much to speculation as to the historical and statistical study of actual conditions of economic life for the satisfactory accomplishment of that development." It is true that the statement of principles stayed in the constitution only three years and that one reason for dropping it was that this paragraph did not give enough emphasis to the deductive approach. My view, and I assume it is yours also, is that we should insist upon the importance of combining the two. I think we urgently need to make a concerted effort to change the incentives under which young economists work so as to encourage the kinds of historical, statistical, and other research that make this combination.

MORRIS A. COPELAND, *President*

REPORT OF THE SECRETARY FOR THE YEAR 1957

The minutes of the Executive Committee are a record of official acts of the Association. The minutes of the March and December, 1957, meetings are presented below. Following these minutes is a summary of the year's operations, with comments and interpretations concerning the Association's activities.

Minutes of Executive Committee Meetings

1. Minutes of the spring meeting held in Rye, New York, March 29-30, 1957:

The *second meeting* of the *1957 Executive Committee* was held at the Westchester Country Club, Rye, New York, March 29-30, 1957. The following were present: M. A. Copeland, presiding, and J. D. Black, Solomon Fabricant, W. J. Fellner, Milton Friedman, B. F. Haley, B. W. Lewis, Ruth P. Mack, R. A. Musgrave, J. J. Spengler, Faith M. Williams, and E. E. Witte. Absent were: J. W. Bell, Simon Kuznets. Attending as members of the Nominating Committee were: Eveline M. Burns, G. H. Hildebrand, R. F. Mikesell, and P. M. Sweezy (G. W. Terborgh and R. A Young were absent); and as guests: F. H. Knight, J. P. Miller, and G. W. Stocking.

1. *President's Remarks* (M. A. Copeland). The meeting was called to order at 10:15 a.m. President Copeland explained that Professor Bell could not attend because of illness and Gertrude Tait (Executive Assistant) was asked to serve in his stead and she was requested to convey to him the sincere sympathy of the Executive Committee and best wishes for a speedy recovery. It was VOTED that Miss Tait be authorized to serve as substitute as needed for the balance of the year.

2. *Minutes.* The minutes of the December 27 and 29, 1956, Executive Committee meetings were approved with minor corrections as presented to the Committee in page proof.

3 and 4. *Reports of the Secretary, Treasurer, and Finance Committee.* A summary of C. A. Barker's report on the 1956 meeting in Cleveland was presented. Also, Miss Tait summarized the activities of the Secretary's Office, including status of membership, increase in advertising rates, bank balances, investment portfolio changes, and progress of the *Directory* and *Papers and Proceedings* of the 1956 meeting. These reports were accepted.

5. *Report of the Managing Editor* (B. F. Haley). Professor Haley presented suggestions for the regular replacements on the Editorial Board and all names were acceptable to the Executive Committee. The final panel is to be presented to the Executive Committee at the December meeting.

The Managing Editor expressed a desire to send out a questionnaire to 300-350 people to get opinions and criticism of the various aspects of the *American Economic Review.* It was VOTED to approve this project and to appropriate up to $500 to cover expenses of distributing and processing.

Professor Haley outlined a proposal to have two survey articles a year for a period of four years, each about 35 printed pages, to be published as part of the *Review* or as separates, the author to be paid an honorarium. It was suggested that a committee would have to be set up to select authors and subjects. N. S. Buchanan, of the Rockefeller Foundation, is planning a similar series for England. It would be advisable to co-operate with his committee in choosing fields. The President was authorized to submit a proposal to the Rockefeller Foundation for the sum of $13,000 to finance this series of survey articles, this proposal to be drawn up by the Editor in consultation with the Chairman of the Committee on Research and Publications.

It was VOTED to instruct the Secretary and Managing Editor to arrange with the George Banta Company to continue the self-cover on all reprints of articles and communications and reimposition when principal article begins on an even page.

Some of the difficulties involved in the joint relationship of the Secretary's and Editor's offices were discussed. It was VOTED that the Secretary be instructed to get bids for one or more alternative suppliers for providing the services which Banta now gives the Association.

6. *Reports of Standing and Special Committees.*

6a) *Committee on Research and Publications* (J. P. Miller). Arrangements have been made for another volume in the "Readings Series," on "Economic Development," by Professors Bruton and Millikan.

Professor Miller presented a comprehensive report on the cumulative index project, giving the background and the results of a questionnaire sent out to selected professors, directors of research organizations, and librarians. The final proposal of the Committee was that the index cover the years 1931 through 1957 or 1958 for the *American Economic Review* and the *Papers and Proceedings* (and, if possible, the years 1911 through 1930), some twenty-odd English-language economics journals (in some cases omitting articles with only a passing value), the economic articles in the *Journal of the American Statistical Association* and the *Royal Statistical Society Journal*, and only the English articles in *Kyklos* and *Metroeconomica*. It is estimated that the index will consist of two volumes of 450 pages each.

It was VOTED that the President and Professor Miller be asked to approach one of the foundations for funds to publish an index of the journals on the general principles indicated. It was also VOTED that if successful in raising the funds, the President is to appoint a committee to carry out the project. If it seems advisable, the Executive Committee can be polled again about this.

It was VOTED to accept with thanks the report which was prepared by Professor Miller, with the able assistance of Mrs. Dorothy Livingston.

Professor Miller recommended that M. F. Millikan, whose term expired in 1956, be reappointed for another three-year term. The recommendation was approved.

It was VOTED that an additional $300 appropriation be made for the expenses of the Committee on Research and Publications.

6b) *Committee on Economic Education* (B. W. Lewis). Professor Lewis gave an oral report. It was VOTED that this Committee be enlarged to six members, for three-year terms, two to change each year, the sixth member to be Clark L. Allen. (See 1956 Secretary's Report for membership roster.) Pursuant to the action of the Executive Committee (December, 1956, meeting), three members were named to represent the Association on the Board of Trustees of the Joint Council on Economic Education: B. W. Lewis (one-year term), C. C. Bloom (two-year term), and L. V. Chandler (three-year term).

6c) *IEA Representatives* (H. S. Ellis and Gottfried Haberler). In the absence of Professors Ellis and Haberler, their written report was summarized. This covered the First Congress, held in Rome, September 6-11, 1956, and refresher courses and round tables held and planned. The report appeared in the May, 1957, "Proceedings."

6d) *Committee on Honors and Awards* (G. W. Stocking). The Chairman reported that after reviewing the files of the former chairman, N. S. Buchanan, he canvassed the members of the Committee by mail ballot. On the basis of the result of this ballot, the Chairman presented the recommendations for the Francis A. Walker and John Bates Clark awards. It was VOTED that the balloting for the Clark award to be made in 1957 be restricted to the first two names presented by the Committee. As the result of the balloting, in which members of both the Committee on Honors and Awards and the Executive Committee participated, the recipients of the awards were determined.

It was VOTED that the Committee on Honors and Awards meet in December and have a report ready for the spring meeting of the Executive Committee in 1958 on the whole subject of making the Clark award, and if so, broadening the field. There was no question of the continuation of the Walker award.

6e) *Committee on Foreign Honorary Members.* A communication from Gottfried Haberler suggesting possible additional foreign honorary members was read. It was VOTED that if the Association names honorary members, the selection should be based on their scientific achievement and merit. Further action was deferred.

6f) *Committee on Academic Freedom and Civil Liberties* (Fritz Machlup). This Committee (Fritz Machlup, Chairman, Howard R. Bowen, and Richard B. Heflebower) had no formal report to make but the President stated that a report would be made at the December meeting.

6g) *Nominating Committee* (Eveline M. Burns). During the evening session, the Nominating and Executive Committees met as an electoral college and considered nominees for 1958 officers. The balloting for president proceeded and a candidate was agreed upon. It was not possible to reach him by phone that evening. The opinion was expressed by the Nominating Committee that if the candidate refused nomination, the matter should be referred back to that Committee for further action. It was VOTED that if the candidate refuses, the procedure shall be as follows: The Nominating Committee will mail to the

members of the electoral college two suggested names; the members of the electoral college will ballot for a single name, which need not be one of the two. If any one individual gets a majority of the votes cast, he shall be offered the nomination. If no one individual gets a majority, the two highest will be submitted to the electoral college for another ballot.

The electoral college then discussed the nominees for vice-presidents and members of the Executive Committee and for the representative to the SSRC. It was VOTED to appoint R. A. Gordon as the SSRC representative for another three-year term.

7. *Reports of Council Representatives.*

7*a*) *ACLS* (F. H. Knight). Professor Knight gave an oral report on the last meeting of the Conference of Secretaries and on the reorganization of the Council. It was VOTED to accept the report, with thanks. Frederick Burkhardt, President of the ACLS, was invited to attend these sessions but regretted that he was not able to do so.

7*b*) *SSRC* (J. P. Miller). Professor Miller gave an oral report and called attention to the fact that at the March meeting the most interesting thing was the trend in applications for fellowships and grants-in-aid; namely, that there were fewer in economics than in the past. The SSRC has recently received a grant to finance a committee to advise the Bureau of the Census on the revision and bringing up to date of Historical Statistics of the United States. A Committee on the Analysis of Economic Census Data was set up last fall and has been co-operating with the Census Bureau. Professor Miller referred to the report in the May, 1957, "Proceedings" for further information. Professor J. J. Spengler also spoke, emphasizing the need for letting the profession know about fellowships and grants-in-aid. He said the failure to apply might just be that there is more money available elsewhere to economists. Professor Haley suggested that the Council get their announcements for these to him earlier so that they can be published in the September *Review* (deadline for which is July 15). Professor Miller then told of a proposal to undertake, possibly with some government sponsorship, a volume on social trends. It was VOTED that Professor Miller's report be accepted.

8. *Annual Meetings.*

8*a*) The schedule of future meetings was reviewed: 1957, Philadelphia; 1958, Chicago; 1959, Washington, D.C.; 1960, New Orleans; 1961, New York City. It was the sense of this group that the Association will not meet in any hotel which is segregated with respect to meeting rooms, living accommodations, or dining facilities. In view of the present situation in New Orleans, the Secretary was instructed to make alternative arrangements for 1960 as soon as possible. If possible, this was to be done without canceling the New Orleans arrangements, so that a final decision can be delayed until a later date in case the situation in New Orleans should change.

8*b*) In accordance with previous arrangements to co-operate with the Western Economic Association in their August 28-30, 1957, meeting in Salt Lake City, the President was directed to designate a member to represent the A.E.A. and to present a paper (the subject of which was to be approved by the Western Economic Association). It was VOTED to pay the expenses of this representative.

9. *Miscellaneous and Unfinished Business.* It was VOTED to authorize the Secretary to write to Huston Thompson and invite him to serve as counsel for the AEA.

10. *New Business.*

10*a*) It was VOTED to approve the proposal that Section IV, Article 5, of the Bylaws be amended to read as follows: "The Editorial Board shall have charge of the publication of the *American Economic Review*. The Managing Editor shall be ex officio member and chairman of the Editorial Board."

Amendments to the bylaws were proposed by Mr. Copeland to provide for the election of the president a year earlier than under the present procedure. These amendments were considered and agreed to in principle. It was the sense of the meeting that they should be supplemented to provide that the president-elect and the two, instead of the three, most recent ex-presidents should be voting members of the Executive Committee. Messrs. Friedman and Copeland were asked to serve as an informal committee to prepare appropriate wording and to report the same at the next meeting of the Executive Committee.

10*b*) A request from the International Co-operation Administration was presented and Professor Musgrave was asked to draft a letter to them indicating our desire to co-operate with them in enrolling foreign members. It was noted that the Association would have to operate within its present charter and bylaws.

10*c*) A communication from the American Association for the Advancement of Science

was read which informed the AEA that it had been changed from an associate to an affiliate. It was the sense of the meeting that President Copeland's name should not be used by the AAAS in their membership drive.

The President was authorized to appoint a representative to the AAAS Council.

10*d*) The balance of the meeting was turned over to the discussion of the program for the 1957 meeting.

Before adjourning at 12:30 p.m. on March 30, Miss Gertrude Tait was given a vote of thanks for serving in the absence of Professor Bell.

2. Minutes of the Christmas meetings held in Philadelphia, Pennsylvania, December 27 and 30, 1957:

The *third meeting* of the *1957 Executive Committee* was called to order at 6:30 p.m., December 27, M. A. Copeland presiding. The others present were: J. W. Bell, J. D. Black, Solomon Fabricant, B. F. Haley, Simon Kuznets, B. W. Lewis, Ruth Mack, R. A. Musgrave, J. J. Spengler, and E. E. Witte. Guests present were: G. W. Stocking, S. E. Harris, Mabel Timlin, James Tobin, Fritz Machlup, and F. S. Deibler. Absent were: W. J. Fellner, Milton Friedman, and Faith Williams.

The *first meeting* of the *1958 Executive Committee* was held on December 30 at 6:00 p.m., G. W. Stocking presiding. Present were: J. W. Bell, M. A. Copeland, J. D. Black, Solomon Fabricant, B. F. Haley, R. A. Musgrave, E. E. Witte, S. E. Harris, James Tobin, and Mabel Timlin. Reporting as representatives were R. A. Gordon, F. H. Knight, and J. P. Miller, and as guest, F. S. Deibler. Absent were: W. J. Fellner, Milton Friedman, G. J. Stigler, and Faith Williams.

The account below does not follow the chronological order of business as transacted but treats in sequence the items as they were listed in the agenda.

1. *President's Remarks* (M. A. Copeland). In calling the meeting to order, Professor Copeland outlined the procedure to be followed and proposed advancing several items on the agenda for early consideration, so as to wind up the current year's business before the 1958 committee took over. During the dinner hour, the President outlined a report which appears in full as an exhibit in the minutes of the business meeting. The President reported that the Rockefeller Foundation approved the request of the Association (as authorized by the Executive Committee during the summer) for a grant to defray expenses involved in entertaining the two visiting Soviet economists. After a protracted discussion concerning the advisability of tape recording the addresses of the two Soviet economists at the Saturday night session, it was VOTED that if they had no manuscripts to submit, they be asked to permit the use of a tape recorder in order to get a record of the meeting for the *Papers and Proceedings*.

2. *Minutes*. The minutes of the March 29-30, 1957, meeting, held at Westchester Country Club, Rye, New York, were approved with minor corrections.

3. *Report of the Secretary* (J. W. Bell). Some of the problems faced by the Local Arrangements Committee were discussed, such as the hotel facilities for the meetings and the employment service. The appointment of a chairman of the Local Arrangements Committee for the Chicago meeting in 1958 was announced and plans for the Washington meeting in 1959, the still unsettled 1960 New Orleans meeting, and the New York 1961 meeting were mentioned. High lights were presented on the membership growth and composition, details of which may be found in Exhibit II following the Secretary's Report. The 1956 *Handbook* continued to tax the staff and facilities of the Secretary's Office through midyear and the load was not much relaxed thereafter since the staff started immediately to prepare for the issue of a 1957 supplement. The usual business of exchange advertisements, advertising rates, permission to reprint and translate was reviewed. Last year's over-all deficit for the publication series—"Survey," "Readings," and "Translations"—has been somewhat reduced. Inventory holdings, when liquidated, will take the Association out of the red and help finance the new volumes now under way.

Copies of the 1957 information booklet were distributed and suggestions for improvement were solicited. Some 900 copies of this booklet were distributed during the past year.

The Secretary announced that Mr. Huston Thompson had accepted the appointment as Counsel but no matters had come up during the year calling for his services.

4. *Reports of the Treasurer, Finance Committee, and Auditor* (J. W. Bell). Copies of the balance sheet and of the income and expense statement were circulated, as was also the list of the investment holdings and a copy of the Auditor's Report. The significant item on the statement showing the comparative financial condition is the large cash item, which consisted chiefly of the Carnegie and Ford Foundation grants; and the significant items

on the income and expense statement are the ordinary increase in income from dues, subscriptions, sales, and advertising and interest and dividends from our investments, and the corresponding increases in operating expenses. The extraordinary changes were income from sales of securities, which more than paid for the printing costs of the 1956 *Handbook* or *Directory*. It was pointed out that the auditors devoted the working days of one week and one day in going over the books. The reports were accepted, with a VOTE of thanks to the members of the Finance Committee (Roy C. Osgood, Chairman, C. Wells Farnham, and James Washington Bell) and to David Himmelblau & Company, the auditor. It was VOTED to re-elect the present incumbents named above for another year and the Secretary was instructed to write letters of appreciation to these members, expressing the thanks of the Association for their continued faithful and effective service.

The question of raising membership dues and subscription rates was raised but not discussed. No changes were proposed. It was suggested that for the spring meeting an overall budget of income and expenses be presented by the Treasurer.

5. *Report of the Managing Editor* (B. F. Haley). The report of the Managing Editor was circulated and the high lights presented. After some discussion concerning size, content, classification of articles, and printing costs, a budget for $50,000 was submitted for 1958 and approved. Professor Haley also described the results of a survey which he had conducted by mail, covering a rather substantial sample of the membership.

The appointment of O. H. Brownlee and Kermit Gordon to the Editorial Board was approved.

An *ad hoc* committee, Solomon Fabricant, Chairman, appointed to consider the salary of the assistant to the Managing Editor, recommended the increase in salary of Miss Doris Merriam to $6,000. On the basis of a similar proposal, a like increase for Miss Gertrude Tait was recommended and both were approved.

6. *Reports of Standing and Special Committees.*

6a) *Committee on Research and Publications* (J. P. Miller). On recommendation of the Committee, it was VOTED to authorize Professor J. P. Miller to negotiate with foreign sponsors for participation by the Association in the underwriting of the publication of the *Life and Letters of Walras* being prepared by William Jaffe, up to the amount of $2,500.

With respect to the "Translation Series," Alexander Gerschenkron was asked to submit a list of ten or more titles for further consideration by the Committee, these names to be added to those of Pareto, Von Thunen, and others which have previously been submitted.

6b) *Committee on Economic Education* (B. W. Lewis). The Committee is co-operating actively with the Joint Council on Economic Education. It will have a full report to submit at the spring meeting of the Executive Committee.

A Ford Foundation grant of $3,000 will be devoted to the preparation of a roster of names containing those of our members answering question 7 of the 1956 *Handbook* questionnaire. The processing of these questionnaires is now under way and is being done by Dean Eugene Swearingen and staff at Oklahoma State University.

6c) *Committee on Honors and Awards* (G. W. Stocking). Professor Stocking reported results of a questionnaire sent to all present and past members of this Committee, concerning the desirability of continuing the J. B. Clark awards. The results showed a preference of 2-1 for continuing the award, but further discussion and a decision on this matter was postponed until the spring meeting.

6d) *Committee on Academic Freedom and Civil Liberties* (Fritz Machlup). The Committee drafted a report covering two academic cases—Professors Sweezy and Davis—which Professor Machlup summarized. The full report is published under committee reports below.

6e) *Nominating Committee* (Simon Kuznets). Professor Stocking announced that Simon Kuznets had accepted the chairmanship of this Committee and submitted a panel of names from which he expected to appoint the other members.

7. *Miscellaneous Reports.*

7a) *International Economic Association.* Professor H. S. Ellis has submitted a brief report of the activities of the IEA for the past year. (See below.)

It was VOTED to authorize the President to appoint a panel of nine names asked for by the Institute of International Education, Albert G. Simms, Vice-President. From this panel a committee is to be appointed to administer a Ford Foundation grant for the purpose of conducting economic institutes for foreign graduate students enrolling for graduate work in economics in U.S. universities.

Announcement was made of the receipt of the Carnegie Corporation's $9,000 travel grant to enable representatives of our Association to attend foreign conferences. Since like grants have been made to ACLS, SSRC, and to other constituent members of the

councils, it was suggested that we formulate specifications similar to those drawn up by other organizations governing these awards.

7b) *Foreign Honorary Members.* Correspondence urging the reconstitution of the Committee on Foreign Honorary Members has been received and names have been suggested to fill the vacancies now existing in our foreign honorary member list. Time did not permit consideration of this matter, which is being put on the agenda for the spring meeting.

7c) *Ad Hoc Committee on the 1957 Program Open Competition* (Ruth Mack). In implementing the session on selected papers, Professor Copeland sought the aid of a committee of judges, of which Dr. Ruth Mack served as Chairman and Professor Oscar Ornati as Secretary. A brief report on the competition, prepared by Professor Ornati, was presented by Dr. Mack.

8. *Reports of Council Representatives.* Due to the pressure of time, no formal reports were called for, but reference was made to the fact that reports of representatives are published in the "Proceedings."

9. *Unfinished and Miscellaneous Business.*

9a) No further action was taken with respect to the schedule of annual meetings for 1958 to 1961. An option on Hotel Roosevelt in New Orleans for 1960 is still being held and facilities are still available in both St. Louis and Dallas. This matter is being put on the agenda for consideration at the spring meeting.

9b) *Amendments to the Charter and Bylaws.*

Proposed revisions affecting Section III, Paragraphs 1, 2, and 5, and Section IV, Paragraphs 1 and 5, providing for the selection of a first vice-president who would succeed to the presidency, were approved. The text of these revisions will be printed in the September number of the *American Economic Review* and will be voted on by mail ballot to be sent out in November.

9c) Professor Frederick Shipp Deibler, Secretary-Treasurer, 1926-36, was invited to attend the meetings of the Executive Committee. He will be asked to substitute for Professor Bell, who has accepted a three-month State Department assignment to India, beginning late January.

10. Balance of the meeting of the Executive Committee was devoted to the discussion of a program preview for 1958.

The meeting adjourned at 10:00 p.m.

Activities and Operations

The brief report which follows summarizes the events of the year; i.e., meetings, publications, committee activities, relations to other associations and councils, and so forth, here and abroad.

Annual Meetings. Figures for the attendance at the Philadelphia meetings indicate that over 3,000 were registered, of which about 2,000 were members of the A.E.A. Thus the meetings were well attended.

The commitments for future meetings are: 1958, Chicago, Palmer House, H. V. Prochnow, Chairman of the Local Arrangements Committee; 1959, Washington, D.C., Sheraton-Park and Shoreham Hotels; 1960, New Orleans, Roosevelt Hotel (commitment not firm; option is being held pending further action by the Executive Committee); 1961, New York City, Hotel Commodore.

Membership. The figures for members and subscribers, this year and last, are shown in Exhibit II following this report. The net gain of 507 though less than last years's exceptional increase is still large compared with the 200 per year increase for the past several previous years. The curve for membership growth is shown in Chart I, page 475, in the 1956 *Handbook.*

An arrangement has recently been entered into with the International Cooperation Administration to send membership invitations to foreigners recom-

mended by the ICA. Some 88 invitations have already been sent, and although the handling and postal costs are a handicap, it is hoped by this arrangement to extend the influence of the Association to foreigners interested in American economic problems and policies.

The 1956 Handbook and 1957 Supplement. Due to frustrating delays and difficulties, it proved impossible to complete the 1956 *Directory* by March or April as originally anticipated. With the *Papers and Proceedings* appearing in May and the *American Economic Review* in June, July was the most practicable month for dating and mailing the *Handbook*. Because of its size, it had to be sent out separately, and in order to comply with second class mailing provisions, it had to appear as Number 4 of the *American Economic Review* and as a *Handbook* rather than a *Directory*. Between the deadline date for inclusion in the volume and the date of its publication, many new names were added to the membership roll which do not appear in the *Handbook*. It was therefore considered desirable to prepare a 1957 supplement. This supplement, which will include all new names added to the membership between June 15, 1956, and November 1, 1957 (the deadline for receiving questionnaires), will, it is hoped, be ready for distribution by midyear.

American Economic Review. The Managing Editor's report, published below, describes the size, content, and budget for the *American Economic Review,* the activities of the Editor's Office and the Editorial Board, and contains also the results of a survey which was authorized by the Executive Committee last spring.

The series of photographs and biographical sketches of past presidents, *et al.,* has about reached an end. The photograph of the current president appears in the March issue of the *American Economic Review* along with the presidental address. We are therefore up to date in this series.

The employment section in the *Review* continues to serve a useful purpose and this service of publishing announcements of vacancies and applications for positions without charge will continue until we find a better use for this space. It will be noted in Professor Haley's report that few people indicate this service as being preferred, but to those who use it, it is a vital service.

With the increasing use of our mailing list, we receive a proportionate number of complaints from our members. We are glad to receive criticisms since it is a check on our judgment in the selection of materials which we permit to be sent. The test which we use is the educational service which the mailing performs: Is it worth enough to a sufficiently large segment of our members to warrant sending it to all? This problem will increase in its significance now that we have installed our own addressing machine. We hope in the course of time to classify our members so as to enable us to provide our clientele with selective lists for special purposes. We hope at the same time to make the use of our mailing list profitable to the Association.

Another matter which becomes more difficult as the volume increases is how much advertising to accept and what should be the character of this advertising. Here again the criterion is its educational worth and the amount is limited so as to avoid any disruption in the reader's attention to the text.

A liberal policy is still pursued with respect to permission to reprint and translate articles and papers from our publications. This could be a source of revenue, but where charges are made they have been in the form of an honorarium, which was passed on to the authors.

Papers and Proceedings. The eighteen sessions to be published in the *Papers and Proceedings* will probably exceed the 500 pages which were our original target and may become another large volume of 600 pages. We have used every device to keep this volume within manageable proportions. Participants are notified of the restrictions on length when they are invited to prepare papers and they are again notified later in the year of our editorial specifications, but authors too often lack appreciation of the character of the papers and the audience and readers these are supposed to serve. Published addresses are of a different character from scientific papers and monographs.

Information Booklet. A revision of the sixteen-page description of the purposes and activities of our Association is being prepared. Copies are distributed to officers, committee members, and prospects receiving invitation to membership, and to anyone else who wants to know what the Association is and does. These booklets are available upon request.

Committee Activities. The list of members of all standing and *ad hoc* committees may be found at the end of this report.

Committee on Research and Publications (J. P. Miller, Chairman). Under the auspices of this Committee, the cumulative index of economic journals project has been set up at Yale University. Professor J. P. Miller is assuming the direction of this work, with the help of an advisory committee. A staff has been recruited under Mrs. Dorothy Livingston, formerly of the Catalogue Department of Yale Library. This project is supported by a Ford grant of $35,000, which, it is hoped, will cover the editorial expenses and the preparation of the manuscript. It is expected that the Association will have to appropriate several thousand dollars toward meeting the printing costs.

Progress is being made on Volumes VIII, IX, and X of the "Readings Series" and, without having made any commitments yet, new titles are being considered. Some of the slow-moving volumes, e.g., the Lane and Riemersma, *Enterprise and Secular Change,* we hope to sell in a package deal with other items.

New items in the "Translation Series" are being considered, and Professor Miller is authorized to negotiate with foreign sponsors in supporting the preparation of volumes on the life and works and letters and correspondence of Walras.

The proposal to publish a sequel to the *Survey* Volumes I and II has been replaced by a plan to publish a series of selected articles on vital economic topics, running over a four-year period, in the *American Economic Review.* This project is being financed by a Rockefeller grant of $13,000.

No further progress has been reported on the bibliography-in-economics project.

Committee on Economic Education (B. W. Lewis, Chairman). This Com-

mittee is working in close co-operation with the Joint Council on Economic Education, upon which Council we have three representatives. Chiefly in order to aid the work of these agencies, we are, with the help of a Ford Foundation grant of $3,000, compiling a register of economists in economic education. The major operation in this endeavor is the processing of Question 7 of the 1956 *Directory* (and presumably of the 1957 supplement) questionnaires. The Committee intends to submit a full report of its activities at the spring meeting.

Committee on Honors and Awards (G. W. Stocking, Chairman). The Committee is to be reconstituted and will report at the spring meeting.

Committee on Academic Freedom and Civil Liberties (Fritz Machlup, Chairman). This Committee is in a sense a successor to the Committee on the Status of the Profession, which was discharged in 1955. No complaints of violation of academic freedom have been received by the Secretary or by this Committee during the past year. However, the status of the Sweezy and Davis cases was reviewed and the Committee's report is published below.

International Economic Association. Professor H. S. Ellis has submitted a report of the activities of the IEA, which is printed below.

There is no longer a standing committee on international economic co-operation, but the Secretary continues to receive inquiries requesting co-operation with various international agencies. A travel grant in the amount of $9,000 has been received from the Carnegie Corporation, the purpose of which is to enable representatives of the Association to attend foreign conferences. Specifications governing these awards are being drawn up.

Foreign Honorary Members. A Committee on Foreign Honorary Members was allowed to expire. In the course of time new vacancies, caused by death, have reduced the list of honorary members from the twenty-five permitted by our bylaws to fifteen. As in the case of the J. B. Clark award, so in this instance there has been some hesitancy in making selections which please everyone.

Reports of Council Representatives. Reports of R. A. Gordon and W. L. Thorp are printed below.

A proposal for a change in the bylaws was taken up at the business meeting and the text is found there. Changes in the procedure for the election of the president are being formulated and the proposed changes in the bylaws will be published for the consideration of the members before balloting.

Committees Appointed During the Year

COMMITTEE ON ELECTIONS
Yale Brozen, *Chairman*
Bion B. Howard
James Washington Bell

COMMITTEE ON LOCAL ARRANGEMENTS
Karl R. Bopp, *Chairman*
Clay J. Anderson, *Cochairman*

NOMINATING COMMITTEE
Eveline M. Burns, *Chairman*
George H. Hildebrand
Raymond F. Mikesell
Paul M. Sweezy
George W. Terborgh
Ralph A. Young

FINANCE COMMITTEE
Roy C. Osgood, *Chairman*
C. Wells Farnham
James Washington Bell

PROGRAM COMPETITION JUDGES
Ruth P. Mack, *Chairman*
Oscar Ornati, *Secretary*
Jesse J. Burkhead
Lowell Harriss
James C. Ingram
James W. McKie
John Mellor
Arnold M. Soloway
William S. Vickrey
Peter N. Vukasin
C. Ashley Wright

PROGRAM COMMITTEE
Morris A. Copeland, *Chairman*
Abram Bergson
Corwin D. Edwards
Solomon Fabricant
Milton Friedman
Martin R. Gainsbrugh
Allan G. Gruchy
Ben W. Lewis
Chandler Morse
Richard A. Musgrave
Faith M. Williams

Standing Committees and Representatives

COMMITTEE ON ACADEMIC FREEDOM AND CIVIL LIBERTIES
Fritz Machlup, *Chairman* (1959)
Howard R. Bowen (1958)
Richard B. Heflebower (1957)

COMMITTEE ON ECONOMIC EDUCATION
Ben W. Lewis, *Chairman* (1959)
Clark L. Allen (1959)
Clark C. Bloom (1958)
Floyd A. Bond (1958)
Archibald McIsaac (1957)
Paul J. Strayer (1957)

JOINT COUNCIL ON ECONOMIC EDUCATION, BOARD OF TRUSTEES
Ben W. Lewis (1957)
Clark C. Bloom (1958)
Lester V. Chandler (1959)

COMMITTEE ON RESEARCH AND PUBLICATIONS
John P. Miller, *Chairman* (1958)
R. A. Gordon (1957)
William C. Nicholls (1959)
Willard L. Thorp (1960)
Alexander Gerschenkron (1957)
Arnold C. Harberger (1958)
Max F. Millikan (1959)
James Washington Bell, Ex Officio

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE
William S. Vickrey

AMERICAN COUNCIL OF LEARNED SOCIETIES
Frank H. Knight (1958)

INTERNATIONAL ECONOMIC ASSOCIATION REPRESENTATIVES
Howard S. Ellis (1961)
Gottfried Haberler (1961)

COMMITTEE ON HONORS AND AWARDS
George W. Stocking, *Chairman* (1962)
Paul A. Samuelson (1962)
Edward S. Mason (1958)
W. Blair Stewart (1958)
J. Douglas Brown (1960)
Jacob Marschak (1960)

NATIONAL BUREAU OF ECONOMIC RESEARCH
Willard L. Thorp (1960)

SOCIAL SCIENCE RESEARCH COUNCIL
R. A. Gordon (1957)
John P. Miller (1958)
William C. Nicholls (1959)

REPRESENTATIVE TO UNESCO
Calvin B. Hoover

Representatives of the Association on Various Occasions

AMERICAN ACADEMY OF POLITICAL AND SOCIAL SCIENCE MEETING
Irving B. Kravis Holland Hunter
AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE, Section K, December 27, 1957, Meeting
Carroll L. Christenson
ST. JOSEPH COLLEGE, ANNIVERSARY CONVOCATION
Clyde Olin Fisher
COUNCIL OF POPULATION AND HOUSING CENSUS USERS
Raymond Goldsmith
NATIONAL COUNCIL FOR THE SOCIAL STUDIES, COMMITTEE ON RELATIONS WITH LEARNED SOCIETIES
Ben W. Lewis
NEW YORK JOINT COUNCIL ON ECONOMIC EDUCATION
Archibald M. McIsaac
GEORGIAN COURT COLLEGE, SEMICENTENNIAL COMMEMORATIVE EXERCISES
Broadus Mitchell
WASHINGTON COLLEGE, 175TH ANNIVERSARY CEREMONY
Elinor Pancoast
NATIONAL EDUCATION ASSOCIATION, 100TH ANNIVERSARY
Frank Pierson
WESTERN ECONOMIC ASSOCIATION MEETING
Joseph J. Spengler
INAUGURATION OF UNIVERSITY AND COLLEGE PRESIDENTS
Frederick deWolfe Bolman, Franklin and Marshall College
William E. Hoadley, Jr.
Edwin Cameron Clarke, Geneva College
Stewart Monroe Lee
John Lowell Davis, Chapman College
Wytze Gorter
Novice G. Fawcett, Ohio State University
Ben W. Lewis
William Clyde Friday, University of North Carolina
Don Humphrey
Richard Glenn Gettell, Mount Holyoke College
Willard Thorp
Sidney Walter Martin, Emory University
Ernst Swanson
Stanley Hubert Martin, West Virginia Wesleyan
G. Warren Nutter
Mark F. Scully, Southeast Missouri State College
Werner Hochwald
James P. Shannon, College of Saint Thomas
Francis M. Boddy
Sister Vincent Therese Tuohy, Saint Joseph's College for Women
Theresa Wolfson
Frank Richard Veal, Allen University
Horace B. Davis

Use of the Mailing List

Permission was granted to the following to use our mailing list to send the material indicated:

UNIVERSITY OF ILLINOIS, BUREAU OF ECONOMIC AND BUSINESS RESEARCH: Advertising circular.

NATIONAL ASSOCIATION OF MANUFACTURERS: "Facing the Issue of Income Tax Discrimination" and "Perspective on Gold."

UNIVERSITY OF MICHIGAN, BUREAU OF BUSINESS RESEARCH: Advertising *Consumer Credit and the American Family, Problems of Plant Location in Michigan, Central Banking in Mexico,* and *Rubber Developments in Latin America.*

MONTHLY REVIEW: Advertising books.

GENERAL ELECTRIC COMPANY: Annual Report.

UNESCO PUBLICATIONS CENTER: Information on UNESCO publications.

HARVARD UNIVERSITY PRESS: Advertising "Harvard Economic Studies."

JOINT COUNCIL ON ECONOMIC EDUCATION: Articles on economic education.

AMERICAN STATISTICAL ASSOCIATION: Announcement of local meeting (Illinois, Indiana, Michigan, and Wisconsin); order blank for proceedings of 1955 and 1956 meetings of A.S.A. Business Economics Statistics Section.

UNIVERSITY OF CHICAGO PRESS: Advertising *Journal of Business.*

INSTITUTE OF LIFE INSURANCE: Copies of 1956 *Life Insurance Fact Book.*

WESTERN ECONOMIC ASSOCIATION: Notices to members in eleven Western states of their August, 1957, meeting.

COLUMBIA UNIVERSITY PRESS: Brochure on United Nations publications.

COMMITTEE FOR ECONOMIC DEVELOPMENT: Policy statements, "Economic Development Assistance," "Tax Reduction and Tax Reform—When and How"; rules for essay competition to find best informed opinion on "the most important economic problem to be faced by the U.S. in next twenty years."

AMERICAN COUNCIL OF LEARNED SOCIETIES: Announcement of fellowship, grants-in-aid, and special awards programs.

KELLEY & MILLMAN: Catalogue.

AMERICAN INSTITUTE FOR ECONOMIC RESEARCH: Copies of *Cause and Control of the Business Cycle; Current Economic Trends.*

ADVERTISING COUNCIL: Copy of digest of Advertising Council-Yale University round table discussion on "American Economic System."

AMERICAN ASSEMBLY, COLUMBIA UNIVERSITY: Announcement of publication of monograph on foreign aid.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE: Invitation to membership.

AMERICAN PHILOSOPHICAL SOCIETY: Announcement of *Population Redistribution and Economic Growth, U.S., 1870-1950.*

COMMERCIAL CREDIT COMPANY: C. W. Phelps's *Accounts Receivable Financing as a Method of Business Finance.*

AMERICAN INSTITUTE OF CERTIFIED PUBLIC ACCOUNTANTS: Speech by Marquis G. Eaton.

PRINCETON UNIVERSITY PRESS: Catalogue.

CHASE MANHATTAN BANK: Issue of *Business in Brief* with offer to members to be placed on mailing list.

PRUDENTIAL INSURANCE COMPANY OF AMERICA: Address by Carrol M. Shanks, "Are Prosperity and Stable Prices Incompatible?"

INDIANA UNIVERSITY: Announcement of new quarterly, *Business Horizons.*

HOWARD ALLEN, INC.: Announcement of Kenneth Boulding's *The Skills of the Economist.*

KRAUS REPRINT CORPORATION: Announcement of reprint of *Economic History Review,* Vols. 1-18 (Economic History Society, London).

MELDRUM AND FEWSMITH: Republic Steel material.

Saturday Review: Subscription offer.

Nation's Business: Subscription offer.

Encyclopaedia Britannica: Offer regarding "Great Books of the Western World."

BUSINESS STATISTICS ORGANIZATION: Subscription offer.

U.S. News & World Report: Subscription offer.

American Heritage: Subscription offer.

Atlantic Monthly: Subscription offer.

AMERICAN COMMITTEE ON UNITED EUROPE: Announcement of handbook on Britain and Europe.

Respectfully submitted,

JAMES WASHINGTON BELL, *Secretary*

EXHIBIT I

Publication Costs

Papers and Proceedings				Handbooks		
Year*	Number of Pages	Number of Copies	Cost	Number of Pages	Number of Copies	Cost
1930	222	4,300	$ 1,353.91			
1931	308	4,300	1,919.18	88	4,200	$ 589.54
1932	316	4,200	1,819.75			
1933	216	4,000	1,284.85	88	3,900	522.71
1934	232	3,700	1,192.91			
1935	248	4,000	1,347.88			
1936	360	4,200	2,037.90	58	4,100	454.36
1937	344	4,300	1,922.03			
1938	200	4,500	1,234.10	112	4,500	1,118.84†
1939	288	4,600	1,785.91			
1940	444	4,900	2,657.12	108	5,000	822.58
1941	479	5,200	3,294.45			
1942	548	5,400	3,909.79	208	5,500	1,775.72†
1943	535	5,500	3,652.56			
1944	470	5,800	3,350.40			
	144	5,900	1,215.22‡			
1945	536	6,400	4,502.84			
1946	960	6,700	8,149.90	143	6,900	2,035.71
1947	781	7,700	8,140.79			
1948	591	8,500	8,701.41	345	7,700	6,948.06†
1949	537	9,500	7,844.50			
1950	650	10,100	9,864.76	41	9,200	1,163.84†
1951	816	10,400	11,965.40	18	8,300	692.63†
1952	768	10,700	13,190.83	11	8,188	620.09†
1953	612	10,900	10,935.98	187	8,400	4,416.69
1954	765	11,000	13,932.96	11	7,900	660.06†
1955	711	11,000	12,900.41	8	8,000	540.21†
1956	651	11,200	12,115.97			
1957	754	12,400	16,253.84	548	10,100	15,815.33†

* This is the year of publication and pertains to the meeting of the preceding year. The figures are published in the subsequent year.

† "Who's who" volumes; 1950—"Who's who" supplement; 1951 on—names and addresses supplement.

‡ Part of papers presented at annual meeting published as supplement to June number.

EXHIBIT II

Members and Subscribers

	Totals 11/30/56	Added	Removed	Gain or *Loss*	Totals 11/30/57
Class of membership:					
Annual	7,634	634*	468§	166	7,800
Junior	533	329†	368*	*39*	494
Family	129	8	4	4	133
Complimentary	58	11	2	9	67‡
Life	78	14	1	13	91
Honorary	18		3	*3*	15
Total Members	8,450	996	846	150	8,600
Subscribers	3,135	850	493	357	3,492
Totals	11,585	1,846	1,339	507	12,092

* Includes 140 junior members changed to annual.

† Includes 15 annual members changed to junior.

‡ Includes 15 who do not receive publications.

§ Resigned, 123; nonpayment, 257; died, 38; lack of address, 35; changed to junior, 15.

REPORT OF THE TREASURER FOR THE YEAR ENDING NOVEMBER 30, 1957

The tables below show the financial results for the past fiscal year compared with last year and with 1948. The year 1948 was selected, since that was the last preceding year when the *Directory* of the "who's who" type was issued. The first table shows income and expense operations and the second comparative financial conditions.

COMPARATIVE RESULTS OF OPERATIONS FOR 1948, 1956, AND 1957

	11/30/48	11/30/56	11/30/57
Income			
Membership dues	$28,003	$47,646	$ 49,383
Subscriptions	11,831	17,852	19,896
Sales	1,417	2,908	3,432
Advertising	6,829	11,128	13,236
Directory income (net)	161	—	—
Republications income	1,000	—	—
Sundry income	—	78	134
Dues and publications income	$49,241	$79,612	$ 86,081
Interest	$ 1,195	$ 1,770	$ 1,770
Dividends	2,944	3,337	3,397
Less custodian fees	*128*	*249*	*231*
Sales of securities (net)	1,887	386	18,096
Investments (less fees)	$ 5,898	$ 5,244	$ 23,032
Total income	$55,139	$84,856	$109,113
Expenses			
Office salaries	$10,167	$23,040	$ 31,581
Other administrative expenses	3,237	6,234	6,254
Annual meeting	1,434	*1,861*	*1,713*
Executive Committee	1,124	1,426	2,269
Other committee expenses	1,148	801	654
Administrative and operating expenses	$17,110	$29,640	$ 39,045
Review printing	$19,046	$28,164	$ 33,162
Papers and Proceedings printing	8,701	12,116	16,254
Directory printing	7,300*	479	15,815
Editorial office (*Review*):			
Contributors	1,775	2,427	2,597
Editorial and clerical salaries	6,444	11,529	11,807
Other expenses (net)	566	*237*	*599*
Publications	$43,833	$54,478	$ 79,036
Total expenses	$60,943	$84,118	$118,081
Net operating income or *loss*	$ *5,804*	$ 738	$ *8,968*
Appropriations	*600*	—	*800*
Net income or *deficit*	$ *6,404*	$ 738	$ *9,768*

* Estimate exceeded cost by $351.

Financial Operations. As in previous years, income from all sources and expenses of all kinds are listed here—a grouping which differs from the treatment found in the Auditor's Report, which separates administrative operations and publication results. Only rounded figures are given.

Total income from all sources amounted to $109,113 in 1957—an increase of $24,257 over last year. This increase is accounted for by larger income from dues and subscriptions, sales and advertising (about $6,500), but chiefly by profit taken on the sale of securities (some $18,000).

Expenses have increased even more than income, the total being $118,081 for 1957 compared to $84,118 for 1956, or an increase of $33,963. Most of this increase in expenses ($24,558) is in publication costs, the remainder, $9,405, representing administrative and operating expenses. This division is not literally accurate, since a substantial share of the $8,541 increase in office salaries was devoted to the production of the 1956 *Handbook* or *Directory.*

Total expenses for 1957 of $118,081 exceeded the income of $109,103 by $8,968. The additional $800 for appropriations makes a total net deficit for the year of $9,768.

COMPARATIVE FINANCIAL CONDITION FOR 1948, 1956, AND 1957

	11/30/48	11/30/56	11/30/57
Assets			
Cash on deposit and on hand	$ 7,279	$ 5,997	$ 17,975
Receivables (net)	3,136	5,667	6,688
Prepaid expenses and inventories	286	841	640
Furniture and fixtures (net)	398	1,894	4,521
Investments at cost:			
Bonds	33,109	75,370	75,370
Stocks	48,624	60,237	55,085
Total assets	$92,833	$150,006	$160,279
Liabilities and Funds			
Accounts payable	$13,705	$ 8,154	$ 9,890
Allied Social Science Associations	829	—	—
Deferred income	11,415	9,750	9,399
Membership extension fund	1,213	—	—
Fund for proposed secretariat	35	—	—
Carnegie Fund for International Travel	—	—	9,000
Ford Fund for index of economic journals	—	—	5,000
Ford Fund for register of economists	—	—	3,000
Fund for *American Economic Review* questionnaire	—	—	384
Fund for Committee on Research and Publications	—	502	491
Sundry	—	64	47
Committee appropriations (not expended)	3,892	—	—
Life memberships	3,525	8,600	9,900
Total liabilities and funds	$34,614	$ 27,070	$ 47,111
Surplus			
Balance at beginning of period	$64,523	$122,198	$122,936
Transfers from life memberships	100	—	—
Net income or *loss* for period	*6,404*	738	*9,768*
Unappropriated surplus	$58,219	$122,936	$113,168
Total footings	$92,833	$150,006	$160,279

This figure should not be considered unfavorable in view of the fact that we absorbed extraordinary, nonrecurring costs in publishing a very expensive "who's who" *Directory* which was distributed to members without additional charge.

INVESTMENT PORTFOLIO

Year	At Par	Cost			Market
	Bonds	Bonds	Stocks	Total	Stocks and Bonds
1925	$25,000	$24,661.75		$ 24,661.75	
1930	31,000	32,439.48		32,439.48	
1933	33,500	32,962.48	$ 3,954.23	36,916.71	$ 31,522.50
1935	16,000	15,280.48	28,114.50	43,394.98	50,338.72
1940	25,000	22,519.80	41,155.95	63,675.75	60,553.88
1942	27,000	24,651.12	41,556.06	66,207.18	58,211.88
1945	40,000	36,705.95	44,955.81	81,661.76	103,574.76
1948	35,000	33,108.63	48,624.14	81,732.77	84,841.91
1950	35,000	33,108.63	51,978.53	85,087.16	104,177.27
1951	43,000	43,340.16	49,764.51	93,104.67	117,316.75
1952	42,000	42,312.67	58,934.00	101,246.67	130,836.02
1953	68,000	68,308.05	46,458.90	114,766.95	134,562.38
1954	61,000	61,518.63	38,082.20	99,600.83	132,280.63
1955	75,000	75,370.10	59,394.86	134,764.96	166,772.60
1956	75,000	75,370.10	60,237.30	135,607.40	168,337.25
1957	75,000	75,370.10	55,084.88	130,454.98	151,638.75

RETURN ON INVESTMENTS

Year	Bonds	Stocks	Total	Rate of Return on Cost
1925	$1,350.00		$1,350.00*	
1930	1,695.21		1,695.21	5.22%
1933	1,679.49	$ 108.57	1,788.06	4.84
1935	1,022.96	680.70	1,703.66	3.92
1940	1,037.56	2,182.46	3,220.02	5.06
1942	1,306.49	2,186.17	3,492.66	5.28
1945	1,479.99	2,488.85	3,968.84	4.71
1948	1,194.85	2,944.31	4,139.16	5.06
1950	1,117.50	3,860.39	4,977.89	5.85
1951	1,026.30	4,607.67	5,633.97	6.05
1952	1,117.84	3,681.53	4,799.37	4.75
1953	1,435.12	3,587.45	5,022.59	4.36
1954	1,621.06	2,961.75	4,582.81	4.58
1955	1,750.16	3,002.50	4,752.66	3.53
1956	1,770.00	3,336.94	5,106.94	3.76
1957	1,770.00	3,397.05	5,167.05	3.90

* Estimated income for year.

Financial Condition. The most significant changes occurring in the assets and liabilities during the past year are reflected in the figures for cash, furniture and fixtures, and in funds.

Cash includes $17,000 Carnegie and Ford Foundation grants. A new Elliott addressing machine, with equipment, accounts for $2,700 to $3,000 of the furniture and fixtures item. The Secretary's Office is now prepared to do its own addressing, as well as to run off envelopes and address slips for publishers

and others who have legitimate educational services to render to the members. It is hoped in the course of time to punch address stencils and to classify members into meaningful categories, thus obviating the need of sending all mail to everybody.

No changes have occurred in the bond holdings, but a net reduction in holdings of stock of about $5,150 on a cost basis has been made.

Accounts payable and deferred income, usually large at this period of the year, are slightly larger still at this reporting because of the congestion in the office which caused some delay in bookkeeping.

Three grants have been received within the past year. The funds are to be used for special purposes. The Carnegie grant for $9,000, fully paid in, is to be used to pay travel expenses of representatives to foreign conferences. The Ford Foundation payment of $5,000 is the first installment of a $35,000 grant for the cumulative index project and the $3,000 payment is for the economists register project, which is being done in collaboration with the Joint Council on Economic Education. These sums total $17,000 and constitute the bulk of the cash on hand referred to above.

A contingent liability of $500 on William Jaffe's translation of Walras is still outstanding (see minutes, March, 1955), as is also a joint liability (with the Royal Economic Society) amounting to $600 on underwriting the sale of the *University Teaching of Social Sciences: Economics*. (By authorization of the Executive Committee, the liability to Professor Jaffe was liquidated December 27, 1957.)

Commitments on life memberships are still increasing.

Unappropriated surplus has decreased by the amount of this year's deficit, $9,768, to $113,168. Total footings amount to $160,279.

A list of present holdings of stocks and bonds, together with changes made during the year are found in the Report of the Finance Committee. The tables above show, for selected years, the proportions of bond and stock holdings at cost, market values, together with rates of return. On the basis of cost, the rate of return on investments for the past year was 3.90 per cent and on the market values 3.42 per cent.

Respectfully submitted,

JAMES WASHINGTON BELL, *Treasurer*

REPORT OF THE FINANCE COMMITTEE

December 5, 1957

Executive Committee,
American Economic Association,
Evanston, Illinois.

GENTLEMEN:

The accompanying tables show the list of investment holdings of the Association as of the end of the fiscal year November 30, 1957, and changes made since the last report. Cost and approximate market values are shown.

LIST OF SECURITIES HELD BY THE ASSOCIATION

Stocks

Number of Shares of Common Stock	Issue	Cost	Approximate Market Value 11/29/57
100	American Trust Co. (San Francisco)	$ 4,261.13	$ 3,200.00
200	Central & South West Corp.	2,801.69	7,975.00
208	Columbia Broadcasting System "B"	5,758.85	5,122.00
102	Eastern Air Lines	2,774.10	3,289.50
10	First National Bank of Chicago	3,070.00	2,840.00
300	Gulf Interstate Gas Co. 6% Pfd.	6,240.00	6,000.00
110	Gulf Oil Corp.	2,768.13	13,076.25
131	Houston Lighting & Power Co.	1,624.53	7,215.00
102	Monsanto Chemical Co.	4,625.44	3,557.25
264	Peoples Gas Light & Coke Co.	8,306.15	10,560.00
100	Pure Oil Co.	4,361.98	3,387.50
150	Socony Vacuum Oil Co.	3,884.22	7,556.25
220	Sperry Rand Corp.	4,608.66	4,400.00
		$ 55,084.88	$ 78,178.75

Bonds

Par Amount	Issue	Cost	Approximate Market Value 11/29/57
$20,000	U.S. Treasury Notes, 1¾%, Series "A-1959" due 2/15/59	$ 20,003.00	$ 19,960.00
5,000	U.S. Treasury Bonds, 2½%, due 11/15/61	5,000.00	4,814.00
8,000	U.S. Treasury Bonds, 2¾%, Series "B" due 1975/80*	8,000.00	8,000.00
7,000	U.S. Treasury Bonds, 2¼%, due 12/15/72–67	7,275.63	6,386.00
15,000	U.S. Treasury Bonds, 2½%, due 12/15/58	15,000.00	14,940.00
20,000	U.S. Treasury Bonds, 2½%, due 8/15/63	20,091.47	19,360.00
	Bonds	$ 75,370.10	$ 73,460.00
	Stocks	55,084.88	78,178.75
	Total	$130,454.98	$151,638.75

* Redeemable at par at maturity—not marketable.

The proportion or percentage of stock and bond holdings on cost and market bases is shown for the past three years in the following table.

	Cost		Market	
	Stocks	Bonds	Stocks	Bonds
1955	44%	56%	56%	44%
1956	44	56	57	43
1957	42	58	52	48

The changes reflect the policy which the Committee has been following in maintaining a defensive position with respect to bonds and taking profits on substantial appreciation in individual stocks and maintaining over all a relationship not too far removed from a fifty-fifty ratio. Referring to the table in the Treasurer's Report, which presents a historical review of the composition of the investment portfolio, one notes marked changes since 1925. Stocks were added to our holdings for the first time in 1933. A substantial shift in stocks was made in 1935, when the ratio of stocks to bonds was about 2 to 1 on the cost basis and more than 2 to 1 in market values. An approximate ratio of 35 to 45 per cent bonds on the cost basis was maintained until 1953, although the ratio to market value was held down (except for 1942) by substantial increases in the market price of our stock holdings. In 1953 and again in 1955 we converted stock profits into bond holdings, but despite this action, the stock market has held our ratio of bonds to total market values below 50 per cent.

The Committee has had three formal meetings, at which times a thorough review has been made of our holdings. Its members are always available for consultation by phone.

The following table shows sales and purchases made during the year. It will be noted that no changes were made in the bond holdings and only a few shifts were made in stocks. Three stocks held at a cost of $6,730 were sold

Summary of Securities Purchased and Sold
Year Ended November 30, 1957

Issue	Shares	Cost	Selling Price	Gain or *Loss*
Sold:				
Houston Lighting & Power Co.....	100	$1,240.00	$ 5,898.58	$ 4,658.58
Aluminum Co. of America.....	100	2,133.08	9,825.51	7,692.43
Schering Corp.....	100	3,356.98	9,101.60	5,744.62
		$6,730.06	$24,825.69	$18,095.63
Purchases:				
Houston Lighting & Power Co.....	21	$ 903.00		
Socony Mobil Oil Co.....	13	591.50		
Gulf Oil Co.....	80/100	88.80		
		$1,583.30		

at a substantial profit and $1,583 worth of purchases were made to take advantage of stock rights, resulting in a reduction of the total portfolio from $130,460 to $125,313.

Respectfully submitted,

ROY C. OSGOOD, *Chairman*
C. WELLS FARNHAM
JAMES WASHINGTON BELL

REPORT OF THE AUDITOR

December 17, 1957

Executive Committee
American Economic Association
Evanston, Illinois

DEAR SIRS:

In accordance with instructions we have examined the accounts and related records of the American Economic Association for the year ended November 30, 1957, and now submit our report thereon together with the following exhibits:

Statement of Financial Position— November 30, 1957	Exhibit 1
Statement of Income and Expense for Year Ended November 30, 1957	Exhibit 2

Results from Operations

Net loss for the year ended November 30, 1957, was $9,768 compared with net income of $738 for the year ended November 30, 1956, as shown in the following summary:

Particulars	Year Ended November 30 1956	1957	Increase Decrease*
Income:			
Dues	$47,646	$49,383	$ 1,737
Interest and dividends (net)	4,858	4,936	78
Profit on sale of securities (net)	386	18,096	17,710
Miscellaneous income	78	134	56
Total income	$52,968	$72,549	$19,581
Expense:			
Publication expense	$54,478	$79,036	$24,558
Less—Publication income	31,888	36,564	4,676
Net publication expense	$22,590	$42,472	$19,882
Administrative and other operating expenses	29,640	39,045	9,405
Appropriations	—	800	800
Total expense	$52,230	$82,317	$30,087
Net income or loss*	$ 738	$ 9,768*	$10,506*

* Denotes red.

The increase in dues reflects the increase in membership as reported by the secretary:

Classification	Number of Members at November 30 1956	1957
Regular	7,634	7,800
Junior	533	494
Family	129	133
Life	78	91
Honorary	18	15
Complimentary	58	67
Total	8,450	8,600

Interest on bonds owned was accounted for in accordance with stated rates; dividends received on stocks were compared with amounts reported in published records of dividends paid.

Net publication expense, as shown in the following summary, amounted to $42,472 for the current year compared with $22,590 for the preceding year:

Particulars	Year Ended November 30 1956	1957	Budgetary Estimates for Year 1957
Expenses:			
Printing of—			
Review	$28,164	$33,162	$31,000
Directory and *Handbook*	479	15,815	—
Proceedings	12,116	16,254	—
Editor's honorarium	4,417	4,500	4,500
Payments to contributors	2,427	2,597	2,500
Editorial clerical salaries	7,112	7,307	7,100
Editorial supplies and expense	646	778	750
Sundry publication expense (net)	883*	1,377*	—
Total expenses	$54,478	$79,036	
Less—Income:			
Subscriptions, other than members	$17,852	$19,896	
Sales of copies	2,908	3,432	
Advertising	11,128	13,236	
Total income	$31,888	$36,564	
Net publication expense	$22,590	$42,472	

* Denotes red.

The increase of $19,882 in net publication expense (from $22,590 to $42,472) represents:

Increase in printing of—	
Directory and *Handbook*	$15,336
Proceedings	4,138
Review	4,998
Increase in other expenses (net)	86
	$24,558
Less—Increase in income	4,676
Net increase	$19,882

Billings for the December, 1957, issue of the *Review* and reprints had not been made by the publishers at the time of our examination. The publishers

estimated the cost of the *Review* printings and reprints at $8,920; this amount is included in the year's expenses.

Financial Position

Condensed statements of financial position of the Association at November 30, 1956, and 1957 are compared below:

	November 30		Increase
Assets	1956	1957	Decrease*
Cash on deposit and on hand	$ 5,997	$ 17,975	$11,978
Receivables (net)	5,668	6,688	1,020
Prepaid expenses	841	640	201*
Equipment, furniture and fixtures	1,894	4,521	2,627
Investments at cost—			
Bonds	75,370	75,370	—
Stocks	60,237	55,085	5,152*
	$150,007	$160,279	$10,272
Liabilities, Funds and Surplus			
Accounts payable	$ 8,154	$ 9,890	$ 1,736
Deferred income	9,750	9,399	351*
Fund for travel expenses of delegates to international meetings	—	9,000	9,000
Fund for preparation of a cumulative index of economic journals	—	5,000	5,000
Fund for preparation of a special register of economists	—	3,000	3,000
Fund for committee on publication and research	502	491	11*
American Economic Review Questionnaire Fund	—	383	383
Sundry fund	65	48	17*
Life memberships	8,600	9,900	1,300
Surplus—			
Balance at beginning of year	122,198	122,936	738
Net income or loss for year	738	9,768*	10,506*
	$150,007	$160,279	$10,272

* Denotes red.

Cash on deposit was satisfactorily reconciled with balances confirmed directly to us by the depositories.

The receivables of the Association were not confirmed by correspondence with debtors. Based upon the Association's past experience the reserve for doubtful accounts appears to be adequate to cover normal losses.

Changes in the investment account were verified by the examination of broker's invoices and other supporting data. Securities held at November 30, 1957, were confirmed directly to us by the State Bank and Trust Company of Evanston, Illinois, custodian for the Association.

The increase in the equipment, furniture and fixtures account represents the purchasing of an addressing machine amounting to $2,961 and miscellaneous purchases of $208 which were verified by examination of vendors' invoices.

Insofar as we are able to ascertain, all liabilities of the Association at November 30, 1957, are reflected in the accompanying statement of financial position, and the Secretary has represented to us that to the best of his knowledge all liabilities are disclosed.

During the year ended November 30, 1957, the Association was awarded the following grants:

Grantor	Award	Amount Received	Expended	Purpose
Carnegie Corporation of N.Y..	$ 9,000	$9,000	—	Travel expenses of delegates to international meetings
The Ford Foundation.....	3,000	3,000	—	Preparation of a special register of economists
The Ford Foundation.....	35,000	5,000	—	Preparation of a cumulative index of economic journals

A summary of the transactions in the various other funds is presented below:

Particulars	Committee on Publication and Research	Sundry Fund	*American Economic Review* Questionnaire
Balance, November 30, 1956.....	$502.04	$64.73	$ —
Changes during the year—			
Appropriated.....	300.00		500.00
Expended.....	311.36*	17.25*	116.50*
Balance, November 30, 1957.....	$490.68	$47.48	$383.50

* Denotes red.

We express our appreciation for the courtesies and co-operation extended to our representatives during the course of the examination.

Very truly yours,

DAVID HIMMELBLAU & CO.
Certified Public Accountants

EXHIBIT 1

American Economic Association
Statement of Financial Position—November 30, 1957

Assets

Current Assets:		
Cash on deposit and on hand—		
State Bank and Trust Company, Evanston	$10,792.89	
National Bank of Commerce of Chicago	7,132.30	
Petty cash	50.00	$ 17,975.19
Receivables—		
Review advertising	$ 4,307.00	
Accrued interest and dividends	639.76	
Publication sales	1,502.92	
Membership dues	678.50	
	$ 7,128.18	
Less—Reserve for doubtful accounts	440.58	6,687.60
Inventory of stamps and envelopes		566.40
Unexpired insurance		73.25
Total current assets		$ 25,302.44
Investments (at cost):		
Bonds	$75,370.10	
Stocks	55,084.88	130,454.98
Equipment, Furniture and Fixtures (less accumulated depreciation)		4,521.35
Total assets		$160,278.77

Liabilities, Funds and Surplus

Current Liabilities:			
Accounts payable			$ 9,890.14
Deferred Income:			
Prepaid subscriptions		$ 7,727.94	
Prepaid dues		1,671.00	9,398.94
Funds:			
Carnegie Corporation of New York grant for travel expenses of delegates to international meetings		$ 9,000.00	
The Ford Foundation grant—			
Preparation of a cumulative index of economic journals	$ 5,000.00		
Preparation of a special register of economists	3,000.00	8,000.00	
Committee on Publication and Research		490.68	
American Economic Review Questionnaire		383.50	
Sundry		47.48	17,921.66
Life Memberships and Surplus:			
Life memberships		$ 9,900.00	
Unappropriated surplus—			
Balance November 30, 1956	$122,936.16		
Net loss for year ended November 30, 1957 (Exhibit 2)	9,768.13*	113,168.03	123,068.03
Total liabilities, funds and surplus			$160,278.77

* Denotes red.

Auditors' Opinion

Executive Committee,
American Economic Association:

In our opinion, the accompanying financial statements present fairly the financial position of the American Economic Association at November 30, 1957, and the results of its operations for the year ended that date, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

Our examination was made in accordance with generally accepted auditing standards and included such tests of the accounting records and other auditing procedures as we considered necessary in the circumstances.

Chicago, Illinois
December 17, 1957

David Himmelblau & Co.
Certified Public Accountants

EXHIBIT 2

American Economic Association
Statement of Income and Expense for the Year Ended November 30, 1957

Particulars				Amount
Income:				
Dues—				
Regular, junior and family members			$46,640.71	
Subscribing and contributing members			2,742.50	$49,383.21
Investments—				
Interest on bonds			$ 1,770.00	
Dividends			3,397.05	
			$ 5,167.05	
Less—Custodian fees			231.26	4,935.79
Gain on sale of securities				18,095.63
Miscellaneous income				134.10
Total income				$72,548.73
Expense:				
Administration and other expense—				
Secretary's salary		$ 4,500.00		
Office salaries		27,081.17		
Stationery and printing		1,435.42		
Postage		1,487.91		
Executive committee expense		2,269.11		
Other committee expense		653.81		
Annual meeting (net)		1,713.34*		
Annuity payments		912.92		
Social security taxes		704.35		
Provision for depreciation		542.21		
Telephone and telegraph		326.38		
Insurance		170.21		
Office supplies		192.56		
American Council of Learned Societies		100.00		
Miscellaneous expense (net)		382.29	$39,045.00	
Publication expense—				
Printing of:				
Review		$33,161.83		
Proceedings		16,253.84		
Directory and *Handbook*		15,815.33		
Editorial honorarium		4,500.00		
Payments to contributors		2,597.00		
Editorial clerical salaries		7,306.76		
Editorial supplies and expense		778.52		
Sundry publishing expense (net)		1,377.37*		
		$79,035.91		
Less—Publication income:				
Subscriptions other than members	$19,895.95			
Sale of copies	3,431.85			
Advertising	13,236.25	36,564.05	42,471.86	81,516.86
				$ 8,968.13*
Less Appropriations:				
American Economic Review Questionnaire			$ 500.00	
Committee on Research and Publications			300.00	800.00
Net loss for year ended November 30, 1957 (Exhibit 1)				$ 9,768.13*

* Denotes red.

David Himmelblau & Co.
Certified Public Accountants
Chicago, Illinois
December 17, 1957

We have audited the accompanying balance sheet and other auditing procedures as we considered necessary in the circumstances.

REPORT OF THE MANAGING EDITOR FOR THE YEAR ENDING DECEMBER, 1957

The number of manuscripts submitted to the *Review* was slightly less in 1957 than in each of the four preceding years. Consequently the percentage of manuscripts accepted in 1957 to the number submitted in that year was slightly higher than in recent years. Table 1 gives the comparative figures with regard to manuscripts submitted for the past six years.

TABLE 1

MANUSCRIPTS SUBMITTED 1952–57

	1957	1956	1955	1954	1953	1952
Manuscripts received	215	242	245	231	234	190
Articles	141	153	149	160	122	133
Communications	74	89	96	71	112	57
Percentage of articles accepted	19	18	17	18	15	21

Table 2 provides the breakdown of the volume's contents as between articles, review articles, communications, book reviews, etc. The amount of space devoted to leading articles was about the same as last year; that devoted to review articles decreased slightly, while that devoted to regular book reviews has continued to increase. The broad coverage of new books in the book review section is strongly favored by many of our readers. However, the number of books that appear appropriate for review is increasing each year (see, as some indication of this, the number of pages devoted to classified lists of new books in this same table), and the increase in the size of the 1957 volume in large part reflects the corresponding increase in the number and total pages of book reviews that has occurred.

TABLE 2

SUMMARY OF CONTENTS, 1955–57

	1957		1956		1955	
	No.	Pages	No.	Pages	No.	Pages
Leading articles	22	429	21	425	21	446
Review articles	5	68	7	86	6	67
Communications:						
Original	7	55	6	16	5	31
Comments and replies	6	32	14	51	9	34
Book reviews	192	344	178	311	173	311
Classified Lists:						
New books	—	61	—	57	—	52
Periodical articles	—	66	—	65	—	56
Dissertations	—	28	—	30	—	25
Notes	—	50	—	45	—	39
Graduate offerings	—	—	—	—	—	12
		1,133*		1,086*		1,073*

* Plus some blank pages.

In addition to the lists of new books and the book reviews, the other item which has been taking increased space in successive years is the Notes section. This increase largely reflects the expansion in the personnel of the profession and the increase in the membership of the Association. It is a feature of the *Review* to which readers are quite likely to turn first when they receive their copies, and I doubt whether we would be justified in attempting to reduce the space devoted to it. However, the increase in space devoted to these various services (30 pages over two years) makes it difficult if not impossible to hold down the expense of publishing the journal.

Table 3 summarizes the subject-matter distribution of articles, review articles, and communications for the past five years, also showing in parentheses the 1957 distribution. The most interesting distribution is that of leading articles plus original communications, since to some extent this distribution reflects the areas in which the most work of publishable quality is currently being done. The six fields showing the highest concentration for the period covered are as follows: Income and Employment Theory (23), International Economics (20), Price and Allocation Theory (13), Public Finance (13), Labor Economics (13), and Economic Development (12).

In interpreting Table 3 it should be kept in mind that we do not follow the practice of commissioning articles, except review articles. Hence in the main the distribution of articles and original communicatons by fields reflects the judgment of the Board of Editors, and particularly the Managing Editor, as to which manuscripts submitted, regardless of field, have been most worthy of publication. We have considered it sound policy to place quality and sig-

TABLE 3

SUBJECT-MATTER DISTRIBUTION: ARTICLES AND COMMUNICATIONS, 1953–57 AND 1957

	Articles	Review Articles	Original Communications	Comments; Replies	Totals
General economics	6 (1)	1	2	—	9 (1)
Price theory	10 (3)	3 (1)	3	15 (2)	31 (6)
Income theory	17 (4)	4	6	17 (3)	44 (7)
History of economic thought	3 (1)	3	1	1	8 (1)
Economic development	12 (4)	2	—	2	16 (4)
Social accounting	1	3	1 (1)	—	5 (1)
Economic systems	2 (1)	2 (2)	—	—	4 (3)
Business fluctuations	1	—	2 (1)	3 (1)	6 (2)
Money and banking	5 (1)	2 (1)	3	—	10 (2)
Public finance	10 (3)	—	3 (3)	7	20 (6)
International economics	18 (3)	—	2	4	24 (3)
Business finance	—	—	—	—	—
Business organization	2	—	—	—	2
Industrial organization	3 (1)	2 (1)	3 (2)	3	11 (4)
Land economics	5	—	—	2	7
Labor economics	11	—	2	7	20
Population; welfare	—	2	—	2	4
Unclassified	—	—	2	5	7
	106 (22)	24 (5)	30 (7)	68 (6)	228 (40)

NOTE: The 1953–57 figure is followed in each case by the 1957 figure in parentheses.

nificance of contribution ahead of the objective of obtaining even distribution by subject-matter fields.

Other criteria have been employed, however, to a limited extent. For example, we have continued the policy of limiting the proportion of the total space devoted to articles and communications making use of mathematics more advanced than simple algebra—although it is clear from the attached supplementary report that quite a few of our readers would much prefer that we publish no papers at all requiring an understanding of mathematical analysis. But the Board of Editors would regard it as a serious mistake to close the pages of the official journal of the Association to any one type of economic research, whether it be mathematical, institutional, theoretical, or statistical. We do think it wise, however, to limit the space devoted to papers for the reading of which a knowledge of more than the simplest mathematics is necessary—at least as long as a large proportion of professional economists are not equipped to follow them.

As was reported in the September issue, our request to the Rockefeller Foundation for a grant of $13,000 has been approved. The sum was requested to finance the publication of a series of survey articles in the *Review* over a period of four years. A similar grant has been made to the Royal Economic Society for a series of survey articles to be prepared under the auspices of the *Economic Journal*. Our Board of Editors will collaborate with theirs in the selection of topics and authors for the two series.

At the meeting of the Executive Committee in March an appropriation of $500 was approved to finance a questionnaire to a sample of the membership of the Association with a view to discovering how useful our readers regard the service sections of the *Review* and what suggestions they have for the improvement of the journal. A report on the results of the questionnaire is attached. (See Exhibit I following.) The cost of the study, which is not included in the regular accounts for the *Review* summarized below, was about $300.00.

Table 4 presents the actual expenditures in 1957 for the four regular issues in comparison with the estimated budget and with actual expenditures in 1956. Actual expenditures exceeded budgeted expenditures by about $2,500. The

TABLE 4

ACTUAL AND BUDGETED EXPENDITURES

	Budget 1957	Actual 1957	Actual 1956
Printing and mailing	$31,000	$33,257.05*	$28,131.21†
Editor's salary	4,500	4,500.00	4,500.00
Editorial assistance	7,100	7,412.66	7,112.01
Supplies	750	618.06	680.93
Contributors	2,500	2,597.00	2,427.50
	$45,850	$48,384.77	$42,851.65

* Cost of December number estimated.
† Corrected from 1956 Annual Report.

main item responsible for the excess is the cost of printing and mailing, which is higher than the budgeted amount, first, because the 1957 volume was 44 pages larger than in 1956, and, second, because the number of copies printed was greater by 3,400. Other items which increased were the costs of editorial assistance and payments to contributors, but these were minor in proportion to the increase in printing costs.

Table 5 gives detailed information about printing costs by quarters. The number of copies printed in 1956 averaged 11,550 per issue.

TABLE 5

COPIES PRINTED, SIZE, AND COST OF PRINTING

	Copies Printed	Pages		Issue	Reprints	Cost Including Reprints
		Net	Gross			
March	12,400	267	320	$ 7,835.26	$116.36	$ 7,951.62
June	12,400	259	300	7,228.55	97.43	7,325.98
September	12,400	329	372	9,123.41	106.04	9,229.45
December	12,400	278	344	8,650.00*	100.00*	8,750.00*
		1,133	1,336	$32,837.22	$419.83	$33,257.05

* Estimated.

The estimated costs for the coming year are presented in Table 6, based on a volume of 1300 pages, including advertising (or about 1100 pages of text), and taking into account a proposed increase in the salary of the assistant to the Managing Editor.

TABLE 6

RECOMMENDED BUDGET FOR 1958

Printing (including paper, postage, reprints, etc.)	$34,400
Editor's salary	4,500
Editorial assistance	7,800
Supplies	700
Contributors	2,600
	$50,000

During the year I have had the advice and assistance of the following foreign correspondents—who have been particularly helpful with regard to the selection of foreign books for listing and review:

Isaac Kerstenetzky (Brazil)
Jean-Marcel Jeanneney (France)
Erich Schneider (Germany)
Victor L. Urquidi (Mexico)
P. J. Verdoorn (Netherlands)
Erik Lindahl (Sweden)

Two members of the Board of Editors complete their three-year terms of office at this time: Carl Kaysen and Richard Goode. I wish to express my appreciation of the great service they have rendered the *Review* and the Association by reading and appraising a large number of manuscripts as well as participating in the formulation of general editorial policy. I should like

to nominate for three-year terms beginning in 1958: O. H. Brownlee and Kermit Gordon.

During the year I have frequently sought the aid of members of the profession in addition to the members of the Editorial Board—partly to relieve the latter of what would otherwise be an impossibly heavy burden and partly to obtain advice of specialists in particular areas not represented on the Board. The following have assisted in this way:

A. Alchian	W. Gorter	R. T. Morris
J. W. Angell	G. J. Gurley	R. Nurkse
K. Arrow	A. C. Harberger	M. Reder
W. J. Baumol	W. W. Heller	R. V. Roosa
A. Bergson	G. H. Hildebrand	E. S. Shaw
R. L. Bishop	M. D. Ketchum	R. Solow
K. E. Boulding	H. G. Lewis	N. Spulber
H. Bowen	C. D. Long	G. J. Stigler
H. Brems	F. Machlup	J. Tobin
C. Christ	A. Manne	R. Vining
M. A. Copeland	J. Margolis	H. C. Wallich
D. Dillard	J. L. Markovitz	J. F. Weston
F. W. Fetter	R. McKean	H. Working
M. Friedman	R. F. Mikesell	Y. L. Wu
A. Goldberger	J. N. Morgan	

Respectfully submitted,

B. F. HALEY, *Managing Editor*

EXHIBIT I

REPORT OF SURVEY OF MEMBERSHIP WITH REGARD TO *AMERICAN ECONOMIC REVIEW*

With the approval of the Executive Committee a questionnaire was sent on September 10, 1957, to two samples of the membership of the Association: (1) A random sample of 578 individuals was obtained by taking every 14th name (exclusive of members outside of the United States and Canada) from the new directory. There were 249 replies, or 43 per cent. (2) A selected sample was obtained by taking the names of the authors of books reviewed in the *American Economic Review* in the four issues of 1956 and the first two issues of 1957, but excluding those who were not members of the Association. Of the resulting sample of 103 names, replies were received from 73, or 71 per cent.

1. Nine questions were asked. The first question concerned the service sections of the *Review*, and respondents were asked to check which of these sections they had made use of in 1956 or 1957. The replies are summarized in Table 1. In order to discover whether these sections of the *Review* were more useful to some professional categories of members than to others, the random sample was broken down into the following: (1) academic economists; (2) government economists; (3) business economists (including those employed by foundations, trade unions and business associations); (4) research economists (employed by research organizations); and (5) others (including those whose occupation was not given in the directory). A similar breakdown was made of the selected sample, but the numbers in the several groups were

TABLE 1

SERVICE SECTIONS FOUND USEFUL

	Random Sample							Selected Sample	
	Acad.	Govt.	Bus.	Res.	Other	Total		Total	
	%	%	%	%	%	No.	%	No.	%
Book reviews	99	90	98	85	100	242	97	71	97
Titles: new books	84	70	61	62	80	192	77	60	82
Titles: periodical articles	71	47	59	62	60	163	65	52	71
Titles: dissertations	48	30	32	38	20	104	42	34	46
Notes and personal items	61	57	41	46	40	139	56	37	51
Vacancies and applications	20	13	12	23	20	45	18	6	8
Advertisements: periodicals	42	30	36	15	—	93	37	22	30
Other advertisements	43	30	49	23	20	102	41	28	38
Number of replies	160	30	41	13	5	249		73	

too small (except for the academic group) to give the breakdown any significance.

It is clear for both samples that the service sections of the *Review* are broadly used—with the exception of Vacancies and Applications, but for a number of reasons the figure for this last item should be lower than the others. One of the principal purposes of the survey was to discover whether the time and money cost involved in providing the classified lists of new books and periodical articles was worth while. We also wanted to know whether, possibly, the advertisements of periodicals (giving tables of contents) might not equally well serve the purpose of the classified list ot periodical articles. The table supports the view that the classified lists are worth while; and that the periodicals advertisements are not a very good substitute for the classified lists of periodical articles.

2. We thought that our interpretation of the replies to the first question might be aided if we also asked a second question with regard to the service sections: If you do make use of either the titles of new books or the titles of periodical articles, what *sort* of use do you make of them? A check-list of possible uses was provided, including a category "Other." The results are summarized in Tables 2 and 3. In Table 2 a breakdown is provided by professional categories in the random sample. In Table 3 the results are given for both samples, but in each case the respondents are divided into two groups: (*a*) those who, in response to question 5, indicated that they had read one or more articles in no more than four listed professional journals in 1956 or 1957; and (*b*) those whose reading had included articles in five or more journals.

TABLE 2

USE MADE OF BIBLIOGRAPHICAL SECTIONS: BREAKDOWN BY PROFESSIONAL GROUP

	Random Sample						
	Acad. %	Govt. %	Bus. %	Res. %	Other %	Total No.	Total %
Recommend library purchases: books	66	10	27	31	40	126	51
Select books for personal purchase	57	53	58	38	60	139	56
Bibliography for research: books	64	47	41	62	60	144	58
Bibliography for research: periodicals	61	43	39	62	60	138	55
Bibliography for teaching: books	54	3	5	—	20	91	36
Bibliography for teaching: periodicals	45	3	5	8	20	77	31
Number of replies	160	30	41	13	5	249	

Some of the "other" sorts of use mentioned by respondents were: to check nature of research going on, to recommend for student use, to learn names of individuals currently active in research. In general, Tables 2 and 3 suggest that the uses made of these two service sections are important ones.

TABLE 3

USE MADE OF BIBLIOGRAPHICAL SECTIONS: BREAKDOWN BY NUMBER OF JOURNALS READ

	Random Sample				Selected Sample			
	0–4 %	5 or more %	Total No.	Total %	0–4 %	5 or more %	Total No.	Total %
Recommend library purchases: books	44	57	126	51	54	69	46	63
Select books for personal purchase	49	63	139	56	50	62	42	58
Bibliography for research: books	45	71	144	58	57	78	51	70
Bibliography for research: periodicals	41	70	138	55	57	67	46	63
Bibliography for teaching: books	28	45	91	36	39	60	38	52
Bibliography for teaching: periodicals	21	40	77	31	21	47	27	37
Number of replies	123	126	249		28	45	73	

3. Respondents were asked whether they had found review articles a useful feature. The replies, summarized in Table 4, were strongly favorable.

4. Respondents were asked a similar question with regard to "expositional" articles. Table 4 also summarizes the replies to this question. Again the replies are strongly in the affirmative, but slightly less so than in the case of review articles.

5. The fifth question was designed to discover the proportion of respondents who read the *Review*, as well as to learn how broadly our members read in the periodical literature. The question was: In which of the following general

TABLE 4

USEFULNESS OF REVIEW AND EXPOSITIONAL ARTICLES

	Random Sample							Selected Sample	
	Acad. %	Govt. %	Bus. %	Res. %	Other %	Total No.	Total %	Total No.	Total %
Review articles:									
Yes	88	90	83	85	80	217	87	61	84
No	1	—	7	—	—	5	2	5	7
Did not answer	11	10	10	15	20	27	11	7	10
Number of replies	160	30	41	13	5	249		73	
Expositional articles:									
Yes	82	70	71	92	40	196	79	58	79
No	11	13	12	—	60	29	12	8	11
Did not answer	7	17	17	8	—	24	10	7	10
Number of replies	160	30	41	13	5	249		73	

TABLE 5

NUMBER OF ECONOMICS PERIODICALS READ BY RESPONDENTS: BREAKDOWN BY PROFESSIONAL GROUP

Journals Read	Random Sample						Selected Sample
	Acad.	Govt.	Bus.	Res.	Other	Total	Total
0.....	5	—	2	1	—	8	—
1.....	5	4	9	—	—	18	3
2.....	11	3	11	2	—	27	5
3.....	21	7	2	2	—	32	7
4.....	29	3	4	—	2	38	13
5.....	27	5	3	2	2	39	11
6.....	16	4	3	2	1	26	12
7.....	21	1	4	1	—	27	6
8.....	13	1	2	—	—	16	2
More than 8..	12	2	1	3	—	18	14
Total.....	160	30	41	13	5	249	73

economics periodicals did you read one or more articles in 1956 or 1957? There followed a list of 10 U.S., Canadian, and British periodicals: *American Economic Review, Canadian Journal of Economics and Political Science, Economic Journal, Economica, Journal of Political Economy, Oxford Economic Papers, Quarterly Journal of Economics, Review of Economics and Statistics, Review of Economic Studies, Southern Economic Journal.* Space was provided for respondents to add other journals to the list.

Of the respondents to the questionnaire included in the random sample, 98 per cent checked the *Review*. In the case of the journal checked second in frequency, the percentage was 70. The corresponding figures for the selected sample were 99 and 75. Table 5 gives the results as to how broadly in the periodical literature the respondents said they had been reading.

TABLE 6

RANKING OF AMERICAN ECONOMIC REVIEW: BREAKDOWN BY PROFESSIONAL GROUP

Rank	Random Sample							Selected Sample	
	Acad. %	Govt. %	Bus. %	Res. %	Other %	Total No.	Total %	Total No.	Total %
1.....	40	67	47	8	—	85	41	27	42
2.....	25	24	20	23	17	50	24	12	19
3.....	21	5	17	38	50	43	21	12	19
4.....	8	5	7	8	—	15	7	6	9
5.....	1	—	10	15	17	8	4	1	2
Below 5th.....	4	—	—	8	17	7	3	6	10
Number of replies.....	138	21	30	13	6	208		64	

6. The sixth question was: Indicate your opinion of the *general* quality and usefulness of the articles and communications in the *American Economic Review*, relative to those of the other periodicals listed under 5 by assigning a number (1 to 11) to indicate its relative rank. Although this was obviously a difficult question to answer, and the results should certainly be interpreted very conservatively, the ranking which emerged for the *Review* in the case of both samples was at least reassuring. The results are summarized for both samples in Table 6.

7. The seventh question was designed to give some idea of the *kind* of journal whose articles are regarded as generally useful: Which of the periodicals listed under 5 would you regard as generally superior in quality and usefulness to the *American Economic Review?* The journals that were most frequently ranked above the *Review* were: *Economic Journal, Journal of Political Economy, Quarterly Journal of Economics,* and *Review of Economics and Statistics* (in alphabetical order). This was true of both samples.

8. The eighth question was included because of the plan of the Board of Editors for eight survey articles (financed by a grant from the Rockefeller Foundation) to be prepared over the next four years. Respondents were asked to suggest subjects and authors for these papers. A large number of suggestions were made, and these have been classified and assembled for the use of the Board of Editors.

9. Finally, respondents were asked: Have you any suggestions for the improvement of the *Review?* Of the 249 respondents in the random sample, 140 listed suggestions; of the 73 in the selected sample, 49 did so. Of course all of the comments cannot be reproduced here; but it is possible roughly to classify them and to indicate their general nature. In doing so, we shall merge the two samples, as there is no significant difference in the suggestions made by the two groups.

Service Sections. Six respondents praised the service sections; while two urged that the titles of new books, classified lists of periodical articles, and dissertation lists be dropped. More short abstracts of the contents of books and articles should be provided (3). New books should be so listed as to facilitate selection of titles for library orders (1)—presumably referring to a function served by the Johns Hopkins University guides to selection. Drop new book lists in view of availability of the Johns Hopkins University lists (1). Do something about the Notes section, which is becoming unwieldy (1). Improve (but no indication is given as to the means) the Vacancies and Applications section (1).

The book reviews received quite a lot of attention. Their generally high quality and good coverage were commended (3); the reviews section should be expanded (2). But book reviews should appear more promptly (1)—a view which the Managing Editor strongly shares!—should be assigned to a wider range of reviewers (1), particularly to more of the senior members of the profession (1), and should not be "unduly" critical—particularly when they are the product of younger reviewers (4). There should be more adequate reviews of the foreign literature (1) and of important government and United

Nations economic publications (1). There should be more review articles (9), and in the case of major works there should be two review articles advancing different points of view (1).

Articles and Communications. There was some sentiment that the general quality of the articles was mediocre (2), that they are addressed too frequently to a low common denominator of the profession (2), and are badly written and in need of more severe editing (9). There should be more long articles (2); more short ones (4).

While there was some sentiment in favor of more specialized articles, regarded as a means of achieving higher quality (3), there was a much stronger expression of opinion in favor of less technical or less theoretical papers (12), and less emphasis on specialized research (6). A similar point of view was probably reflected in the plea that others made for more articles of broader interest (2), concerned with current problems of economic policy (39), more like the papers in the *Proceedings* (4); more papers on interdisciplinary aspects of economics in relation to political, sociological, and psychological theory (6). Each issue should include some articles for intelligent "lay" readers, particularly businessmen (2); and there should be more frequent articles useful for teaching purposes (4), for secondary school economics courses (1), for courses in business administration (1).

Implicit in these suggestions (explicit in one case) is the assumption that it is desirable that the editors of the *Review* change its policy of not commissioning articles (other than review and survey articles) to one of selecting subjects and authors in advance of the preparation of the manuscripts. The same assumption is also implicit in suggestions offered as to areas in which more articles should be written and published: location theory and regional economics (2), recent economic developments in foreign countries (1), managerial economics (2), methodology and social philosophy of economics (2), history of economic ideas (1), economic history (1), economic development (1), transportation (1), contemporary economic developments and trends (3). More space should be devoted to empirical research (7), to survey articles (7), to expositional articles (6), to theoretical articles (2), to controversy (1), to essays by senior men of judgment and insight (2), to papers by younger members and the relatively less known members of the profession (4). It hardly comes as a surprise, after these suggestions, to find that some respondents urged the expansion of the *Review* by adding one or two issues a year (5), if necessary economizing on the *Proceedings* (3).

A frequently expressed complaint about the articles in the *Review* concerns the use of mathematical analysis. A considerable number of the respondents urged acceptance of fewer articles involving this sort of technique (36); others recommended a greater use of the mathematical appendix (2) and nonmathematical summaries (1). It is of some interest that those who objected to mathematical articles were predominantly in the academic group of the respondents (28 out of the 36), and included 11 of the 39 who were listed earlier as wanting more papers on current problems of economic policy. A few respondents volunteered approval of the present policy with regard to mathe-

matical articles (3), or expressed the view that more space should be given to articles of this sort (2). Some advised commissioning articles to improve the basic understanding of mathematical and econometric analysis for the benefit of nonmathematical economists (3).

A number of interesting innovations were suggested by different correspondents: (*a*) that the *Review* conduct an annual contest for the publication of a small number of articles based on doctoral dissertations; (*b*) that an editorial section be developed; (*c*) that each issue be devoted to some one major topic.

All of these criticisms and suggestions will be carefully considered by the Board of Editors.

B. F. HALEY, *Managing Editor*

REPORT OF THE COMMITTEE ON RESEARCH AND PUBLICATIONS

The Association received a grant of $35,000 from the Ford Foundation with which to undertake the preparation of a cumulative index of economic journals in the English language for the period 1886 to 1960. The project will be located at Yale University, under the administrative supervision of Mrs. Dorothy Livingston. An Advisory Committee has been appointed by the President. This Committee includes Robert Bishop, M.I.T., Earl J. Hamilton, University of Chicago, Fritz Machlup, Johns Hopkins, John Perry Miller, Yale, Chairman, and Joseph J. Spengler, Duke University. The project will get under way early in 1958 and should be completed by the end of 1961.

This Committee has made arrangements for the preparation of three new volumes of readings: one on "Taxation," edited by Richard Musgrave and Carl Shoup, which is now in press; a second on "Industrial Organization and Public Policy," edited by Richard Heflebower and George Stocking, which should go to the press this spring; and a third on "Economic Development," edited by Max Millikan and Henry Bruton, which should go to press by the end of the year.

The Executive Committee recently authorized the Chairman of this Committee to enter into negotiations to participate in the underwriting of the publication of letters of Walras being edited by Professor William Jaffé, of Northwestern. Arrangements for this publication are being made by a Commission appointed by the Royal Netherlands Academy. Mr. G. G. Koopmans is Chairman of the Commission.

The Committee has been reconsidering the question of encouraging the publication of translations of volumes on economics which have appeared in other languages. It has not yet concluded its deliberations on this subject and would welcome suggestions from members of the Association.

Respectfully submitted,

JOHN PERRY MILLER, *Chairman*

REPORT OF THE COMMITTEE ON ACADEMIC FREEDOM AND CIVIL LIBERTIES

The most important event of the year in the area of academic freedom was the Supreme Court decision in the Sweezy case. Since Paul M. Sweezy is an eminent economist and since the Court decision included an emphatic recognition of academic freedom as an essential liberty, we believe that a full account of the case and of the decision ought to be presented here.[1]

In March, 1954, Sweezy "delivered a lecture [on "Socialism"] to a class of 100 students in the humanities course at the University of New Hampshire. This talk was given at the invitation of the faculty teaching that course. [Sweezy] had addressed the class upon such invitation in the two preceding years as well." The Attorney General of New Hampshire, in the course of an investigation under the New Hampshire Subversive Activities Act of 1951, interrogated Sweezy, among other things, on the subject and contents of his lecture. While Sweezy answered many questions, he refused to answer questions which "infringed upon an area protected under the First Amendment." The Attorney General, as an "investigating committee" of the state legislature, petitioned the Superior Court of New Hampshire to compel Sweezy to give the answers he had refused. The Court, in November, 1954, ruled that the questions concerning the lectures were relevant to the investigation on the basis of "the sections in the statute which relate particularly to teaching or advocating communism," and that "the Attorney General is entitled to inquire into the actual content of any lecture given at any school." Sweezy, persisting in his refusal to answer, was "adjudged in contempt of this Court" and "ordered committed to the County Jail . . . until purged of contempt."

Freed on bail, Sweezy appealed to the Supreme Court of New Hampshire. In March, 1956, this Court held that the trial court had gone too far in allowing the legitimacy of an inquiry "into the actual contents of any lecture given at any school," but that inquires into those "school lectures" were legitimate concerning which there was "reasonable or reliable information indicating that the violent overthrow of existing government may have been advocated or taught, either 'knowingly and willfully' or not." The Court concluded that "the right to lecture and the right to associate with others . . . are individual liberties guaranteed to every citizen . . . but are not absolute rights." The Court "justified the interference [with these rights] on the ground that it would occur in the limited area in which the legislative committee may reasonably believe that the overthrow of existing government by force and violence is being or has been taught, advocated or planned, an area in which the interest of the State justifies this intrusion upon civil liberties." The conviction for contempt of court was upheld.

On Sweezy's appeal, the Supreme Court of the United States, on June 17,

[1] This account will contain verbatim quotations from the two opinions rendered by Chief Justice Warren and Justice Frankfurter of the Supreme Court of the United States and from the judgments of the Superior and Supreme Courts of New Hampshire.

1957, reversed the judgment of the Supreme Court of New Hampshire. Chief Justice Warren delivered an opinion in which Justices Black, Douglas, and Brennan joined. Justice Frankfurter, joined by Justice Harlan, delivered an opinion concurring in the result. Justice Clark joined by Justice Burton, dissented and Justice Whittaker took no part in the consideration of the case. The opinions on which the decision of the Court rested differed on technical matters. The Chief Justice held that there had been "a denial of due process of law" through the "separation of the power of a state legislature to conduct investigations from the responsibility to direct the use of that power." Justice Frankfurter held that the civil liberties of an individual must not be "encroached upon on the basis of so meager a countervailing interest of the State as may be argumentatively found in the remote, shadowy threat to the security of New Hampshire . . . ." But, before making his decision on a more or less technical ground, the Chief Justice also had pronounced on "such fundamental questions of state power" vis-à-vis individual rights, and had declared: "We do not now conceive of any circumstance wherein a state interest would justify infringement of rights in these fields."

Both opinions defend academic freedom in ringing words. According to the Chief Justice:

> . . . there unquestionably was an invasion of petitioner's liberties in the areas of academic freedom and political expression—areas in which government should be extremely reticent to tread.
>
> The essentiality of freedom in the community of American universities is almost self-evident. No one should underestimate the vital role in a democracy that is played by those who guide and train our youth. To impose any strait jacket upon the intellectual leaders in our colleges and universities would imperil the future of our nation. No field of education is so thoroughly comprehended by man that new discoveries cannot yet be made. Particularly is that true in the social sciences, where few, if any, principles are accepted as absolutes. Scholarship cannot flourish in an atmosphere of suspicion and distrust. Teachers and students must always remain free to inquire, to study and to evaluate, to gain new maturity and understanding; otherwise our civilization will stagnate and die.

Justice Frankfurter cited and quoted several strong pronouncements on academic freedom, but his own words on the subject were no less emphatic:

> When weighed against the grave harm resulting from governmental intrusion into the intellectual life of a university, such justification for compelling a witness to discuss the contents of his lecture appears grossly inadequate. Particularly is this so where the witness has sworn that neither in the lecture nor at any other time did he ever advocate overthrowing the Government by force and violence.
>
> Progress in the natural sciences is not remotely confined to findings made in the laboratory. Insights into the mysteries of nature are born of hypothesis and speculation. The more so is this true in the pursuit of understanding in the groping endeavors of what are called the social sciences, the concern of which is man and society. The problems that are the respective preoccupations of anthropology, economics, law, psychology, sociology and related areas of scholarship are merely departmentalized dealing, by way cf manageable division of analysis, with interpenetrating aspects of holistic preplexities. For society's good—if understanding be an essential need of society—inquiries into these problems, speculations about them, stimulation in others of reflection upon them, must be left as unfettered as possible. Political power must abstain from intrusion into this activity of freedom, pursued in the interest of wise government and the people's well-being, except for reasons that are exigent and obviously compelling.
>
> These pages need not be burdened with proof, based on the testimony of a cloud of impressive witnesses, of the dependence of a free society on free universities. This means the exclusion of governmental intervention in the intellectual life of a university. It matters little whether such intervention occurs avowedly or through action that inevitably tends to

check the ardor and fearlessness of scholars, qualities at once so fragile and so indispensable for fruitful academic labor.

Paul Sweezy's case is important chiefly because of the Supreme Court decision which brought it to such a memorable conclusion. This contrasts with other cases which ended with dismissals in violation of tenure rules—in the Sweezy case there was no question of continued appointment (though it is more than doubtful that the University of New Hampshire would now dare to repeat its invitation to this occasional guest lecturer). One violation of academic-tenure regulations through the dismissal of an economist deserves notice here chiefly because of the principle involved, the conflict between the scholar's "freedom of silence" on questions of political beliefs and associations, and the controversial doctrine of his "obligation to candor." The case in point is that of Horace B. Davis, formerly Associate Professor of Eco-economics at the University of Kansas City.

Davis invoked the Fifth Amendment when, in June, 1953, he was interrogated by the Jenner Committee. The University of Kansas City, much to its credit, did not take the position that the invocation of this constitutional right could in itself be a ground of dismissal. Davis was given a hearing before a University tribunal containing several members of the faculty, but he refused "on principle" to answer any question about political beliefs and associations. Although there were no charges that he had been a member of the Communist party and although there was "impressive testimony that he had not abused his position, and that his integrity was manifested in discussions with his colleagues,"[2] Davis was dismissed from his position, in December, 1953, because of "his failure to offer explanations at the final hearing." His attempt to gain reinstatement by court action was not successful. The A.A.U.P. published the findings of its investigating committee in April, 1957, but has not yet (December, 1957) finally disposed of the case.

The chief difficulty in this and similar cases seems to lie in the unwillingness of faculties to rally to the support of a teacher who insists even vis-à-vis his colleagues on his right to be silent on political questions and who refuses to discuss such questions with candor before a committee of his peers. One may well hold that in such instances the faculty in its failure to respect the individual's moral right to remain silent fails to live up to the highest standards of academic freedom. It is difficult to expect university administrations and trustees to be more broadminded than their faculties, though, of course, this is exactly what the "ideal" university government ought to be. Perhaps the rigid adherence to principle on the part of some who are willing to be martyrs will gradually educate educators in the more subtle implications of academic freedom.

Respectfully submitted,
FRITZ MACHLUP, *Chairman*
HOWARD R. BOWEN
RICHARD B. HEFLEBOWER

[2] Report of an investigating committee of the Committee on Academic Freedom and Tenure, American Association of University Professors *Bulletin*, 1957, p. 193.

REPORT OF AMERICAN ECONOMIC ASSOCIATION DELEGATES TO THE INTERNATIONAL ECONOMIC ASSOCIATION

Since the last report, made to the Executive Committee of the AEA at its spring meeting, 1957, the chief activities of IEA have been the conduct of two major round tables. The first of these was held in Rio de Janeiro from August 19 to 28, and the second in Lisbon, September 11 to 18, 1957.

The first of these, devoted to the Economic Development of Latin America, was planned and carried out by a Program Committee consisting of Professor Eugenio Gudin (Brazil), Dr. Javier Márquez (Mexico), and Professor Henry C. Wallich (U.S.), under the chairmanship of Professor Howard S. Ellis (U.S.). Substantial financial support was given by the Fundacão Getulio Vargas, which was also the host of the conference in Rio, by UNESCO, and by various international organizations which paid the expenses of certain participants, who, however, appeared unofficially and spoke as experts and scholars. Members of the round table conference were about equally divided between Latin Americans, on the one hand, and North Americans and others (two Europeans and one Indian) on the other. This was the first round table to be held by the IEA outside Europe, and its success has been such as to encourage the Association to plan for others in the future. The program follows:

Capital and Foreign Trade in the Theory of Economic Development with Special Reference to Latin America

A Round Table of the International Economic Association
Rio de Janeiro, Brazil, August 19-28, 1957

(Parenthesis indicates that the paper was read on behalf of an absent author.)

General Introduction

1. Theoretical interpretation of Latin American economic development: Alexandre Kafka
   Discussion: Gottfried Haberler; Henry C. Wallich
2. The global approach to development programming: Jose Antonio Mayobre
   Discussion: Eugenio Gudin; H. D. Huggins

Theories of Development

3. The theory of the "big push": (Paul N. Rosenstein-Rodan)
   Discussion: Celso Furtado; Ragnar Nurkse
4. Balanced growth without inflation: Roberto Campos
   Discussion: Flavian Levine; P. R. Brahmananda

Capital and Development

5. The role of capital in economic development: Maurice Byé
   Discussion: John D. Adler; (S. K. Krishnaswamy); Joseph Kershaw
6. The capacity of underdeveloped countries to service foreign capital: Gerald Alter

Discussion: Octavio Bulhões; (David L. Grove); Harvey Leibenstein

7. Financial institutions and economic development: Javier Márquez
   Discussion: Jorge Ahumada; Dorival Teixeira Vieira
8. Private versus public foreign investment in underdeveloped areas: (Felipe Pazos)
   Discussion: Octavio Bulhões; Loreto Dominguez

International Trade and Economic Development

9. Re-examination of the theory of international trade from the viewpoint of development: Ragnar Nurkse
   Discussion: Eugenio Gudin; Harvey Leibenstein
10. Terms of trade and economic development: Gottfried Haberler
    Discussions: Helio Schlittler-Silva; Howard S. Ellis
11. Future markets for primary products: Theodore W. Schultz
    Discussion: Jose A. Guerra; L. Dominguez; Roberto Campos
12. Stabilization of the foreign exchange proceeds from exports of primary products: Henry C. Wallich
    Discussion: Jorge Marshall

Directions of Domestic Investment

13. Priority criteria in investment: (Jorge Ahumada)
    Discussion: Gerald Alter; Jacques Boudeville; Harvey Leibenstein
14. Agricultural vs. industrial development: P. R. Brahmananda
    Discussion: Jorge Sol; Theodore W. Schultz
15. Exchange controls and development: Jorge Marshall
    Discussion: Albert O. Hirschman; Javier Márquez

The second round table of the past year resulted from an impetus given to the various international social science organizations by the Social Science Council of UNESCO to study the consequences of the contrasting size of nations. The committee in charge of the International Economic Association's program on this subject was constituted of Professor E. A. G. Robinson (Chairman, U.K.), Professor I. Svennilson (Sweden), Professor Lorie Tarshis (U.S.), and Professor Dusquesne de la Vinelle (Belgium).

ROUND TABLE AT LISBON ON THE ECONOMIC CONSEQUENCES OF THE SIZE OF NATIONS
September 11-18, 1957

The Concept of the Nation and its Relevance to Economic Analysis: I Svennilson

Case Study of the Efficiency of a Large Nation—the U.S.A.: S. Fabricant

Case Study of the Efficiency of a Small Nation—Switzerland: W. A. Joehr and F. Kneschaurek

The Size and Efficiency of the Belgian Economy: L. Duquesne de la Vinelle

For reference: Economic Growth of Small Nations: S. Kuznets

Are the Economies of Scale Unlimited? J. Jewkes

Size of Markets, Scale of Firms and the Character of Competition: Corwin Edwards

The Size of Nation and Dynamic Adjustment: Italy—V. A. Marsan; Austria —K. W. Rothschild; Portugal—L. T. Pinto; Developing Countries—C. N. Vakil and P. R. Brahmananda

The Size of Nations in Relation to Stability and Steady Progress: L. Tarshis; G. Leduc and J. Weiller

The Size of the Nation and the Cost of Administration: E. A. G. Robinson

The Size of the Nation and Its Vulnerability to Economic Nationalism: R. Triffin

Can the Disadvantages of Smallness Be Overcome by Trade, Customs Unions, Etc.? G. Marcy; T. Scitovsky; P. J. Verdoorn

During the current year, No. 7 in the *International Economic Papers* series has been published under the editorial direction of Mrs. Henderson (Via di S. Erasmo 4, Rome). The present volume includes English translations of eight articles by Sismondi, Einaudi, Gibrat, Lindahl, Kragh, Brus, Lange, and Giersch. A special collection of translations of papers on public finance, outside the regular series of *Papers,* is nearing completion. In the early spring of 1958, the papers and discussions of the First Congress of the IEA, held in Rome in September, 1956, will be published by Macmillan, London, under the editorship of Professor Douglas Hague (University of Sheffield).

Plans for future activities of the IEA include a round table on capital theory in 1958, and, in the near future, a refresher course in Pakistan and a conference in Africa on the economic development of Africa south of the equator.

Applications for membership in the IEA have been received from associations in Bolivia, Mexico, Spain, and the U.S.S.R. Exclusive of these, not yet acted upon, the membership of the IEA includes twenty-seven associations. Its secretary is Mme. Helene Berger-Lieser, 7 rue de Miromesnil, Paris 8.

HOWARD S. ELLIS
GOTTFRIED HABERLER

REPORT OF OUR REPRESENTATIVE TO THE SOCIAL SCIENCE RESEARCH COUNCIL

A number of committees of the Social Science Research Council continue to be active on matters of interest to the members of the American Economic Association, and a brief progress report on the work of these committees may be in order.

Under the chairmanship of G. H. Evans, Jr., work is proceeding satisfactorily on the new volume of *Historical Statistics of the United States*. It is clear that the new edition of this widely used statistical compendium will heavily emphasize economic data. A gratifying number of top-flight economists have participated in the large volume of work that has so far been required. Publication in 1959 is anticipated. Progress is also being made in the analysis of economic census data under the chairmanship of John Perry Miller. Three projects have been approved, on which work is already proceeding. These are (1) the company structure of industry (Carl Kaysen), (2) changes in the geographic distribution of industry (Victor Fuchs), and (3) price-cost relationships (Richard and Nancy Ruggles). At earlier stages of planning and negotiation are studies of concentration and mergers, distribution, industry boundaries, the service trades, and possibly mineral industries.

The Committee on Economic Growth, under the chairmanship of Simon Kuznets, is continuing its far-flung activities. Its foreign studies are well along and arrangements were made this past autumn for work on the Australian national accounts. A conference on the recruitment of a stable labor force in undeveloped areas is planned for the spring of 1958. The Committee on Business Enterprise Research has been inactive but an attempt is being made to reactivate it. It is hoped that the volume on the *Conference on Business Expectations and Uncertainty* will be published by the time this report appears in the "Proceedings" of the American Economic Association. The Committee on Agricultural Economics has also been relatively inactive during the past year.

As I reported last year, the Committee on Labor Market Research has been succeeded by a new Committee on the Family and Economic Behavior. It has used the past year largely to define its sphere of operations.

A new project of interest to economists which the SSRC has just initiated has to do with what we know and do not know concerning economic instability as it affects the American economy. James Duesenberry has agreed to do a preliminary paper, after which a conference of interested persons will probably be held. I should also report for the record that E. S. Shaw has been appointed to the new Committee on International Travel Grants.

As I reported last year, two Institutes on Mathematics in Social Sciences were held during the summer of 1957. One dealt with applications, with separate workshops concerned with different areas. The other institute, cosponsored by the Mathematical Association of America, was attended by

college teachers of mathematics and was concerned with the better adaptation of undergraduate mathematics courses to the needs of students in the social sciences. Economics continues to be in the van of the social sciences in the application of mathematical tools.

In short, the SSRC continues to be active in a range of matters of interest to economists and continues to show a gratifying interest in economic issues for their own sake and in the interrelations between economics and the other social sciences.

Respectfully submitted,

R. A. GORDON

REPORT OF OUR REPRESENTATIVE TO THE NATIONAL BUREAU OF ECONOMIC RESEARCH

The National Bureau of Economic Research continued its high level of productivity in 1957, adding twenty titles to its list of publications. It is difficult to select particular reports for comment but of special importance was the completion of the review of the National Economic Accounts which was undertaken at the request of the Office of Statistical Standards of the Bureau of the Budget. For this task, the Bureau had set up a National Accounts Review Committee. The report reviews the national income and closely related accounts and makes a number of recommendations concerning needed improvements in the accounts to enhance their effectiveness. *The National Economic Accounts of the United States* was transmitted by the Bureau of the Budget to the Joint Economic Committee of the Congress, which incorporated it in hearings held October 29 and 30. Particularly noteworthy was the effort to systematize the national income and product accounts, flow-of-funds statements, balance-of-payments tables, input-output tables, and national balance sheets. Another publication which has proved to be exceedingly timely was the report by David M. Blank and George J. Stigler on *The Demand and Supply of Scientific Personnel.*

The National Bureau is well established in certain areas of research and most of its projects represent steps in long-range research programs. During 1957, six new studies were begun, the last three of which represent studies in somewhat new fields.

Quality of Credit in Booms and Depressions. As a result of the widespread public discussion of the problems of credit quality and the possibility that boom times may bring a relaxation of credit standards that will intensify the problem of subsequent readjustment, a study of the quality of credit in booms and depressions has been started. Its objective is to consider, and to the extent possible to devise, a system of current reporting on the quality of credit.

Application of Electronic Computers to Analysis of Economic Statistics. This project is exploring ways in which electronic computers can be used to improve our understanding of the current business situation by developing new and improved measures for important economic series and by new and more powerful analyses of historical business fluctuations. The general approach is to make intensive analyses in a few economic areas that could previously not be satisfactorily studied because of the large computational costs involved and to prepare electronic computer programs for some of the more important statistical techniques used by economists.

Small Business Financing. In response to a request from the Board of Governors of the Federal Reserve System, the National Bureau began in the autumn of 1957 an inquiry dealing with certain of the problems of the financing of small business. The inquiry is a part of the Study on Small Business Financing undertaken by the Federal Reserve System.

Objectives of the National Bureau's inquiry are (1) to survey available material bearing upon the credit worthiness and loan quality of small versus large firms, and (2) to develop and analyze new data on credit quality by size of firm and to show to what degree the cost and availability of credit may or may not be affected by differential credit quality among firms of various size.

This inquiry is closely related to the National Bureau's project dealing with the Quality of Credit in Booms and Depressions started in 1956 with a grant from the Merrill Foundation and will be developed concurrently with the Quality of Credit project.

Analysis of Consumer Purchase Plans. A project directed to analysis of a unique body of data on consumers' purchase plans as compiled by Consumers Union, Inc., dealing with consumer intentions and behavior, was started in the spring of 1957. It is believed that the analysis will contribute greatly to an understanding of motivations underlying consumer purchases and the accompanying changes in consumption patterns, and contribute to the guidance of future survey work in this area. Such analysis as is envisaged will be of major importance in connection with broader problems to which the National Bureau is devoted; namely, the better understanding of economic fluctuations.

Investment in Education. A study of investment in manpower, particularly the type of investment that takes the form of education, was started in September, 1957. Its major objective is to explore the possibilities of advancing our understanding of this important social area.

The problem of education as a form of investment is a substantial part of the larger question of economic growth. Public and private expenditures run to many billions of dollars each year. Little has been done, however, in any systematic and comprehensive way to view the educational process as a form of investment parallel to and a necessary complement of investment in tangible capital goods and in research and development. Some attempt should be made to measure investment in education in terms reasonably comparable to those used in measuring other forms of investment; to explore possibilities of comparing rates of return on the several forms of investment; and thus to construct a basis for public and private decisions on the extent to which additional investments in various directions are economically sound.

The immediate aims of the study are (1) to determine the volume of national resources devoted to education; (2) to measure the "returns" to education insofar as they are reflected by income differentials associated with differences in level of education; and (3) to devise a measure of the average educational level or quality of the labor force.

The Impact of Public and Private Pension Systems on Saving and Investment. The rapid growth of public and private pension plans, and the prospect of still further growth in what is already a major institution, has raised many questions in the minds of all concerned with the structure and drift of our economy. Interest in these questions has been sharpened by strong differences of opinion concerning the relative roles of governmental and of private action in the move toward greater security for the aged; and by a feeling of uneasiness concerning the effects of the present and prospective systems of pensions on important aspects of our economic life.

Some of these questions are the concern of a study authorized late in 1957 and started at the beginning of 1958. The purpose of the study is to set forth the salient facts needed to understand the relation of our growing structure of pension plans to saving, investment, and the financial markets in which these vital activities meet. Such an analysis of the place of pension plans in our financial organization and an objective assessment of its present and potential significance can provide a firm basis on which differences of opinion can be resolved and effective decisions as to policy made.

Projects on which research associates are working, and the new associates appointed for 1957-58, are:

1956-57

Kenneth A. H. Buckley (University of Saskatchewan)
Economic Growth and Capital Formation

Douglass C. North (University of Washington)
Regional Aspects of American Economic Growth

Julius Shiskin (U.S. Bureau of the Census)
Application of Electronic Computers to Economic Analysis

1957-58

Robert J. Lampman (University of Washington)
Distribution of Wealth and Income

Thomas Juster (Amhurst College)
Consumer Purchase Plans

The tenth Special Conference, under the sponsorship of the Universities-National Bureau Committee for Economic Research, held in November, 1957, was devoted to the quality and economic significance of anticipations data. Attention was given to the plans, programs, and expectations of consumers, business, and government, with a view to increasing knowledge that will be useful in appraising the over-all economic outlook and in considering appropriate economic policy measures. Subjects for future conferences that are being explored are: (1) population and economic change; (2) state and local finance; (3) economics of marketing and distribution; (4) monetary economics and capital financing; and (5) labor economics: wage differentials.

In September, 1957, the Conference on Research in Income and Wealth held a meeting devoted to estimates of United States and Canadian income and investment in the nineteenth century. The meeting was a joint session with the Economic History Association and was held at Williams College.

Respectfully submitted,

WILLARD L. THORP

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1958

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